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ABSTRACT

A curriculum guide for grade 8, the document is divided into eleven units: marketing and distribution; food manufacturing; data processing and automation; administration, management, and labor; secretarial and clerical services; office machines; equipment; metal manufacturing and processing; prefabrication and prepackaging; textile and clothing industry; and regulatory agencies. Each unit is introduced by a statement of the topic, the unit's purpose, main ideas, quests, and a list of career opportunities (positions) available in that area. Next, the areas of language arts, mathematics, science, social studies, home economics, industrial arts, music, and physical education (when applicable) are subdivided into purpose, objectives, activities, materials, and notes with a statement relating these categories to the unit topic. The document is one of ten curriculum guides at the seventh and eighth grade levels presenting a career education emphasis. The teacher's manual for the series is available as CE 001 041. The other guides are: consumer and homemaking (CE 001 042); communications and media (CE 001 043); fine arts and humanities (CE 001 044); construction and environment (CE 001 045); agri-business, natural resources, marine science (CE 001 046); public service occupations (CE 001 047); health occupations (CE 001 048); transportation (CE 001 050); and hospitality, recreation and personal service occupations (CE 001 051). (AG)

ED 089011

GRADE 8: CLUSTER III
Manufacturing, Marketing & Distribution

MANUFACTURING MARKETING AND DISTRIBUTION

BUSINESS & OFFICE OCCUPATIONS

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

CE001049

PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA
Presidential Building
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Washington, D.C. 20004

CAREER DEVELOPMENT EXEMPLARY PROJECT

An Interdisciplinary Course of Study for Grades Seven and Eight

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CAREER DEVELOPMENT EXEMPLARY PROJECT

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THE METROPOLITAN EDUCATIONAL COUNCIL FOR STAFF DEVELOPMENT

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GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION, BUSINESS AND OFFICE OCCUPATIONS

UNITS/TOPICS

1. Marketing and Distribution
2. Food Manufacturing
3. Data Processing and Automation
4. Administration, Management, and Labor
5. Secretarial and Clerical Services
6. Office Machines*
7. Types of Equipment Used in Manufacturing, Marketing and Distribution, Business and Office Occupations**
8. Metal Manufacturing and Processing
9. Prefabrication and Prepackaging***
10. Textile and Clothing Industry
11. Regulatory Agencies****

* No units: Science; Social Studies
** No unit: Social Studies
*** No unit: Social Studies; Industrial Arts, 2 units
**** Social Studies Only; pertains to the entire cluster/module.

Numbering System

8 = Grade Level
III = Cluster Number
220 = Page Number in Total Series

CAREER DEVELOPMENT CURRICULUM GUIDE: GRADE 8

CLUSTER/MODULE: MANUFACTURING, MARKETING AND DISTRIBUTION, BUSINESS AND OFFICE OCCUPATIONS

PURPOSE:

To provide a knowledge of the many and varied employment opportunities available in manufacturing, marketing and distribution, and business and office occupations, especially those in the Washington Metropolitan Area.

To show how geography influences the marketing and distribution of goods (economic law of supply and demand).

To point out the great impact that technology has in everyday life; for example, data processing, foundry, machinery and textiles.

To provide an overview and to broaden the students' concepts of the many secretarial and clerical services available and their essential functions in government (the major employer in Washington, D.C.) and private enterprise.

SYNOPSIS:

The business world as it is depicted in this cluster, Manufacturing, Marketing and Distribution, Business and Office Occupations, profoundly touches the lives of everyone on every economic level, and especially those in the lower and middle income brackets. It is readily seen how the availability or lack of goods in a particular area determines the decrease or increase in price. Because of the many technical advancements in industry, students should be provided an education to cope with the many changes, especially automation, which will directly affect their potential for earning a livelihood. Knowledges and skills learned in secretarial and clerical positions, combined with on-the-job training, will provide students with the necessary qualifications for advancement to the administrative and managerial levels.

The topics in this cluster are:

1. Marketing and Distribution
2. Food Manufacturing
3. Data Processing and Automation
4. Administration, Management, and Labor
5. Secretarial and Clerical Services

SYNOPSIS -- Continued

6. Office Machines
7. Types of Equipment Used in Manufacturing, Marketing and Distribution, Business and Office Occupations
8. Metal Manufacturing and Processing
9. Prefabrication and Prepackaging
10. Textile and Clothing Industry
11. Regulatory Agencies

HIGH IMPACT ACTIVITIES:

1. Visit Briggs Meat and Ice Cream Packing Company, Benning Road, NE
2. Trip to Agricultural Farm, U.S. Department of Agriculture, Beltsville, Maryland
3. Lecture on how shoplifting raises consumer prices
4. Report on Nader's Raiders
5. Visit to President's Commission on Consumer Interest
6. Visit to D.C. Public Schools, Department of Automation
7. Visit to U.S. Civil Service Commission
8. Visit to Bureau of Engraving and Printing
9. Visit L'Aiglon Clothing Factory in Frederick, Maryland
10. Assemblies at school by consultants or other individuals

COMMON RESOURCES:

1. Smithsonian Institute, Division of History and Technology
2. United States Department of Agriculture
3. Interstate Commerce Commission
4. The Credit Bureau
5. Better Business Bureau
6. President's Commission on Consumer Interest
7. U.S. Department of Commerce
8. Federal Trade Commission
9. U.S. Civil Service Commission
10. Government Printing Office Publications
11. D.C.Department of Licenses and Inspections

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 1 - Marketing and Distribution

Topic: Marketing and Distribution (geography-price relationships, supply and demand, methods of processing and distributing foods).

Purpose:

To explore occupations related to the marketing and distribution of products

To show how geography influences the law of supply and demand

To show the relationship between the law of supply and demand and the price of the product

To explore the various means of transporting products

To make the students aware of the techniques involved in the processing and preservation of foods

To make the students aware of the agencies that regulate the marketing and distribution of products

Main Ideas:

1. Many occupations are involved in getting a product to the consumer.
2. Geography influences the marketing and distribution of goods.
3. The price of a product is directly related to its supply and demand.
4. Standing between the producer and the consumer is the middleman.
   a. agents and brokers
   b. wholesalers and jobbers
   c. carriers
   d. retailers
5. The distribution of goods requires a huge network of transportation services.
   a. railways
   b. highways
   c. waterways
   d. airways
6. There are many techniques involved in the processing and preservation of foods.
7. Many agencies regulate the marketing and distribution of products.

Quests:

1. Marketing is a long and complex process. Trace the marketing of a commodity, such as pork, from pen to pork chop.
2. Show how the new techniques in food processing and packaging have changed the daily routine of the modern housewife.
3. Research the origins and purposes of conglomerates and their effect upon the free enterprise system.
4. Show how the government through its farm subsidy program affects the supply of and therefore the demand for certain products.
5. Read and discuss The Jungle by Upton Sinclair.
6. Invite a representative of Hot Shoppes to speak on how it developed from a hotdog stand to a multi-million-dollar food chain.

Career Opportunities:

1. Unskilled

delivery boy
hauler
laborer
merchandise wrapper
mover
over-the-road truck driver
packer
routeman
stock clerk

2. Semi-skilled

advertising copywriter
clerk, general
cost clerk
inventory specialist
longshoreman
receiving clerk
salesman
supermarket cashier
truck driver
warehouseman

3. Skilled

advertising manager
assistant buyer

Career Opportunities -- Continued

budget specialist
buyer
consumer counselor
customer service manager
display director
manufacturer's representative
marketing researcher
purchasing agent
sales correspondent
sales promotion manager
selling manager
store manager
supply-purchasing manager

4. Professional

economist
lawyer
marketing research director
mathematician
personnel director
public relations manager
statistician
teacher, secondary (distributive ed.)
college (marketing)

LANGUAGE ARTS

Purpose: To become aware of the complex processes related to marketing and moving commodities.

To develop skill in reducing a mass of verbal data to simple, communicable principles.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List 5-10 jobs related to marketing and distributing goods.
2. Spell correctly the new terms used in this topic.
3. Explain how the roles of workers in marketing and distribution overlap (are interdependent).
4. Show new skill in "skimming" data by presenting written notes from reading material.
5. Demonstrate skill in summarizing a film by writing reviews.
6. Show an understanding of the relationship of supply and demand by participating in a panel discussion.
7. Prove skill in condensing verbal data by drawing and labeling a chart showing the trip a particular commodity makes from "pig pen to pork chop," for example.
8. Demonstrate improved skill in summarizing an experience by making field trip news reports.

Activities: To accomplish the objectives the student may engage in activities such as:

1. Keep a mini-notebook (scrapbook for this topic, "Marketing and Moving Goods").
   a. Make a growing list of jobs generated by the marketing and distribution processes.
   b. Make a growing list of new terms met in this

Activities -- Continued

topic. Be sure to list a brief explanation or synonym for each term.

c. Write in film summaries for films viewed in this topic.

d. Write in condensations (explain synopsis) of printed leaflets on food distribution secured from distributors.

e. Write in the brief scripts summarizing field trips taken; later convert to tapes done in news report form.

2. Participate in pre-structured panel discussions on key questions such as the following:

   a. Explain how the roles of workers in marketing and distribution depend on one another. Tie-in with Social Studies.
   b. Use a home-made visual aid and discuss how a particular product moves from producer to consumer.
   c. Select a career in marketing and distribution and tell why it might be a satisfying one.

3. Participate in a spelling bee on new terms used in this unit.

4. Draw and label a chart showing how a product moves from the "supply area" to the "demand area."

5. See the following films as time permits. Write a summary critique of each film seen.

   a. "Meat from Range to Market"
   b. "Meat and Meat Packing"
   c. "The Changing American Market"
   d. "Distributing America's Goods"
   e. "The Story of Citrus Fruit" (Coronet, 11 min.)
   f. "Careers in Agriculture"
   g. "Food and People: An Introduction to the World's Food Problems"
   h. "Japan's Food from Land and Sea"
   i. "Paper and Paper Making" (Coronet, 11 min.)
   j. "Miracle of Feeding America"
   k. "The Freight Train"
   l. "The Truck Driver"

Activities -- Continued

m. "Selling as a Career"
n. "The Story of Our Money System"
o. "Transportation in the Modern World" (Coronet, 11 min.)
p. "The Law of Supply and Demand"

N. B. Unless otherwise indicated, the above films are from U. of Iowa.

Materials:

1. Separate notebooks for individuals "Marketing and Moving Goods," or use a section of their existing scrapbooks.
2. Poster paper, tag board for charts on products and movement.
3. Blank tapes, cartridges for recording "news reports" on field trips taken in other subject areas. See Activity # 1.
4. Leaflets from various food distributors/packagers.
5. Films (See titles under Activities).

MATHEMATICS

Purpose: To give students an awareness of the role that mathematics plays in allowing us to sustain life and life styles. Since the advent of urban communities, there has been need for marketing and distribution at a rather sophisticated level. Mathematics is largely responsible for establishing and maintaining reliable marketing and distribution processes.

Obeectives: Upon completion of work in this unit, the student should be able to:

1. Identify and use the factor-product relationship.
2. Solve verbal problems requiring any of the four fundamental operations with whole numbers, fractions, and decimal fractions.
3. Use fractional numerals to represent a part of a whole; a part of a group; an indicated division.
4. Convert common fractions to decimal form, and conversely.
5. Make line graphs illustrating increase in cost of one marketing component against retail price.
6. Arrange a given set of decimal fractions in increasing and decreasing order.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Calculate the fraction of the cost allotted for transportation and express each component of Note 1 in decimal fraction form.
2. The students and/or teacher are to price several items of goods in a store (grocery, clothing, etc.) and to find out the number of items on the shelf of the store or the shipment size received. The students are to calculate the amount of money each component (Note 1) receives for each

Activities -- Continued

item chosen. Tie-in with Business Education.

3. The students and/or teacher are to find out how many items of goods are sold per month by the local store(s). The students are to calculate the approximate amount of money that the retailer receives for each item of goods chosen in (2). Tie-in with Business Education.

4. The teacher is to increase the cost of transportation for several items of goods and have the students calculate the effect of this increase on the retail price. The teacher and/or students are to choose a single item of goods and to increase the transportation cost by ten cents repeatedly up to a one-dollar increase. The students are to plot a line graph of transportation cost against retail price.

5. The teacher and/or students are to visit a local store to find exactly how theft affects the consumer price of goods in this store; also, to attempt to obtain a process or model for making a calculation. In the event that this data is unattainable, the teacher and students are to devise a method for predicting the influence of theft on price from all of the data that is available to them. Tie-in with Social Studies, Business Education.

6. The teacher is to find the transportation cost for bringing the same item of goods from two different places to the District of Columbia, such as oranges from Florida and oranges from California. The student are to calculate the retail cost for this item for each place from which it is shipped.

Materials:

1. Graph paper
2. Information on prices for transporting goods
3. Retail, wholesale, and manufacturing costs

Notes:

1. There are four components in marketing and distribution: (a) manufacture; (b) transportation; (c) wholesaler; (d) retailing. The cost of an item can be broken down in the following way: 1/4 manufacturer cost, 1/5 wholesaler cost, 1/3 retailer cost (assume that this includes profit). 1- (1/4 + 1/3 + 1/5 = transportation.

2. Sample Problems.

   A. A food store orders 48 cans of apricots. Each can of apricots will cost 31 cents. Calculate:
      a. total consumer cost for the apricots. Ans. $14.88
      b. amount of money that each marketing component contributes to the cost for a single item and for the total number of items. Ans. manufacturing: $3.27·08 wholesale $2.97·06, transportation: $3.23·07, and retail $4.96·10.
      c. new cost if the transportation cost is increased by $1. Ans. $19.49.
      d. new cost of a single can of apricots $.40
      e. the new cost for each component Ans. manufacturing, $4.87; wholesale, $3.89; transportation, $4.23; retail, $6.49.
      f. cost of loss if 12 cans of the apricots were stolen off the shelf. Ans. $3.72.

   B. Suppose the $3.72 loss was for a total purchase for the year of 192 cans of apricots and the manager increases the cost of the goods by the loss distributed over the total number of cans purchased, then what would the new cost be if the old cost were 31 cents per can? Ans. $.33.

SCIENCE

Purpose:

To understand how foods are preserved by canning, freezing and drying.

To understand that food poisoning results from improper processing or storage of foods.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Sterilize a container to kill micro-organisms.
2. State the conditions necessary for the growth of micro-organisms.
3. Can a food so that it will not spoil.
4. Freeze a food correctly.
5. Read a centigrade and a Fahrenheit thermometer correctly.
6. Recognize danger signals indicating spoilage of packaged foods.
7. Describe and cite examples of food poisoning and conditions that bring it about.
8. Demonstrate how much weight and space one saved by drying foods.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Discuss briefly food items they have consumed in the last 24 hours which may have come from far-away places. Use a world map to point out the places. Why is it that such food does not spoil? Tie-in with Social Studies: geography of crops and transportation.
2. Bring in food items forgotten in the pantry or refrigerator which may have started to mold. Why did the mold start to grow? Where did the mold come from?

Activities -- Continued

3. Listen to a lecture about the experiments of Louis Pasteur and L. Spallanzani to settle the arguments about Spontaneous Generation. Select a team to do and explain the biogenesis experiment patterned after Pasteur and Spallanzani apparatus. (Lab S-72, reference). Observe and record changes in the chicken broth used for a period of a week or two. Tie-in with Social Studies: history of argument over Biogenesis vs. Abiogenesis. Tie-in with Language Arts: Role play argument between Spallanzani and Pasteur and their doubters.

4. Demonstrate the difference between the boiling water method of sterilization and the pressure cooker method. Review facts from 7th grade on air pressure used to hold lids on canning jars.

5. Select a team for canning a food. Use fruit. Do not use meat, corn, or beans. Can the fruit, using the steam or boiling water method. Open it and eat it at the end of this topic. Tie-in with Social Studies: development of canning jars by John L. Moon and Alexander Kerr.

6. Gather facts and make reports on botulism from the encyclopedias or biology texts. Recall food poisoning news topics, summer of 1971. Discuss and compile a list of danger signals given by contaminated canned foods, frozen foods, and ice cream. Prepare posters on these danger signals.

7. Listen to a lecture on the history of frozen food, starting with the work of Clarence Birdseye. Discuss the merits of freezing fruits and vegetables in season and of freezing leftovers from dinner. How much does it save? How cold does the inside of a freezer have to be? How cold should the interior of a refrigerator be? Compare your findings with U.S.D.A. standards.

8. Select a team to make small amounts of ice cream in the classroom. Use a simple recipe or mix. Use a double boiler arrangement of appropriately sized tin cans to hold the freezing solution around the outside of the can with the ice cream mix in it.

Activities -- Continued

Use various freezing solutions: (a) ice and water, (b) ice and salt, (c) ice and alcohol, and (d) dry ice and alcohol (if available). Pupils record temperatures of different freezing solutions and note time it takes for ice cream to freeze. Record the data. Eat the product.

9. Drying foods: Select two teams to preserve two apples by drying them. Peel and core each apple. Weigh it. Measure its volume by water displacement. Cut into many thin slices. Place on aluminum foil to dry. Dry one apple in a sunny window. Dry the other under a steady source of heat (radiator, light bulb, incubator). Compare drying times in each case to achieve its "new look" and weight. Weigh finished products. Compare with original weight. Calculate percentage decrease of weight. Estimate new volume. Calculate percent decrease in volume. How much weight and space would be saved by shipping 100 dried apples like these? Tie-in with Mathematics. Does this method of preservation change the nutritional value? Tie-in with Home Economics.

10. Select two teams to reconstitute dried fruits. Use 3 prunes and/or 30 raisins commercially dried. Weigh and measure volume by water displacement. Soak in closed jar container for 3 days. Weigh again and measure volume. What are the savings in weight and space for shipping 1,000 dried apples like these? Tie-in with Mathematics: multiplying easily by 100 and 1000.

Materials:

1. 7 250 ml. (or small) flasks
2. large kettle or 4 No. 10 cans
3. 2 hot plates or Fisher burners
4. 4 10° to 110° C. thermometers or 15° to 220°F.
5. 25 ml graduate cylinders
6. weighing scales

Materials -- Continued

7. Books
   a. "Canning," World Book, 1970, Vol. 2 pp. 142-147. (Especially good on method and on food spoilage organisms.) John L. Mason, Louis Pasteur and Spallanzani.
   b. "Food Preservation," World Book, 1970, Vol. 7, pp. 304-309.
   c. "Food, Frozen," World Book, 1970, Vol. 7, pp. 300-303.
   d. "Spontaneous Generation," 1970, Vol. 17, pp. 262. (Abiogenesis)
   e. "Lab. Activity S-72." Biological Science: Patterns and Processes. New York, New York: Holt, Rinehart and Winston, 1966.
8. Films (from Twining Media Center)
   a. #1039 "Life of the Molds" (S)
   b. #1364 "Microbes and their Control" (I)
   c. #1044 "Microorganisms Harmful Activities" (S)
   d. #2043 "New Story of Milk, The" (I-S)
   e. #2037 "Romance of Cheese, The" (I-S)
   f. #2053 "Something You Didn't Eat" (I-S)
9. Free films on which the borrower need pay only the return postage:
   a. "Dear Eddie" (15 min.) and "The Three Squares" 13 min. One month advance notice, from:
      National Canners Association
      Miss Gloria Hansen
      Communications Services
      1133-20th Street, N. W.
      Washington, D. C. 20036
   b. "Farm Fresh to You" (13 min.)
      Three weeks advance notice, from:
      U. S. Atomic Energy Commission
      Division of Public Information
      Washington, D. C. 20545
   c. "Salmon--Catch to Can" (14 min.)
      National Oceanic and Atmospheric Administration
      Audio-Visual Services
      1815 North Fort Myer Drive
      Arlington, Virginia 22209
   d. "Meet Mr. Blue Lake" (1336) (27 min.) and "Now Is the Time" (3229) (28 min.)
      One month advance notice, from:
      Modern Talking Picture Service
      2000 L Street, N. W.
      Washington, D. C. 20036

Notes:

1. All of the above experimental activities could be carried on by different teams of pupils if equipment and space would permit it. Reports and demonstrations by each team could then be made to other class members.

SOCIAL STUDIES

Purpose: To have the students learn how the United States became a major industrial nation.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List and describe briefly key events in the development of industry in the United States from the small shop entrepreneur to the large-scale corporation.

2. Cite reasons why the United States became a major industrial power.

3. State the relationship between industrialization and mass migration from a rural to an urban environment.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Find five or more items in their homes and trace their development from raw material to finished product. They will then select the same number of items from a typical household in the early 1800's and follow the same procedure. Their findings will be reported to the class as a foundation for a discussion of how self-sustaining is the average American household today.

   a. The students will find five types of houses in their neighborhood and associate or compare those with houses in the 1800's. List things which are different and alike.
   b. The students will develop the terms or concepts of the following styles of houses or typical ways of living.
      (1) apartment
      (2) duplex
      (3) ranch style
      (4) split level
      (5) commune
   c. The students will list at least five building materials used in houses today.

Activities -- Continued

(1) panel discussion
(2) write an essay (tie-in with Language Arts)
(3) take pictures with a camera of houses they visited.
(4) make a chart using pieces of materials collected from stores which sell them.

2. Individual Quest: Research and report orally/in writing information concerning the success stories of famous men and explain how they contributed to industrial progress. Examples: John D. Rockefeller, Andrew Carnegie, George Bissell, Henry Bessemer (the Bessemer process). E. L. Drake, George Westinghouse, Benjamin Silliman,Jr., Henry Ford, the Wright Brothers.

3. Group Quest: Research and cite examples of how the growth of industry affected the lives of the citizens of the United States of America; posters should be prepared to show the findings.

4. Group Quest: Construct a chart or complete a graph showing the growth of industry in the United States; posters should be prepared to show the findings.

5. Find the leading industrial centers on a map and explain why the location was conducive to the growth of industry. Include ease of transportation and communication.

6. Field trip: Visit Williamsburg to see how business was carried on in colonial times. (Note: nation of shopkeepers, traders, craftsmen, and small factories where the boss and his neighbors made carriages of fabricated iron or sawed logs.) A discussion comparing and contrasting modern means of production with that of the past will follow. This should include assembly line, mass production, interchangeable parts.

7. Resource Person: Invite a representative from

Activities -- Continued

the Entrepreneurs (a local businessmen's group) to discuss how they operate. Have each student prepare an appropriate question to ask.

8. Group Quest: The students will investigate how steel and oil helped to speed the nation's industrial growth, and prepare an oral/written report or some form of display. Tie-in with Art, Language Arts.

9. Field trip: Visit Smithsonian to view items representing early technology, followed by preparation of a script for a radio or TV newscast of the trip. Tie-in with Language Arts.

Materials:

1. Books
   a. Casner, Mabel B. and Ralph H. Gabriel. Story of the American Nation. New York, New York: Harcourt, Brace and World, Incorproated, 1962.
   b. Gelormino, Gerald and Margaret Gotti. The Challenge of our Heritage. Dobbs, Ferry, New York: Oceana Publications, Incorporated, 1970.
   c. Morison, Samuel Eliot. The Oxford History of the United States. New York, New York: Oxford U. Press, 1965, pp. 761-764. A teacher resource.
   d. Mackey, Margaret, Your Country's Story, New York, New York: Ginn and Company, 1953. See Chapter 19.

BUSINESS EDUCATION

Purpose:

To explore the make-up of clerical occupations within the field of marketing and distribution of products.

To give students an opportunity to acquire basic clerical and salesmanship skills involved in the transfer of goods to the ultimate consumer.

To give students an opportunity to participate in simulated decision-making activities related to marketing and distribution.

To give students an opportunity to become familiar with the Interstate Commerce Commission and the Better Business Bureau as agencies that help to regulate the distribution of goods to ultimate consumers.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Type in tabulated form a description of jobs and job requirements available in marketing that enable the ultimate consumer to obtain goods.

2. Identify desirable personal qualifications required of personnel working with ultimate consumers.

3. Write up and compute data on sales slips and type other forms that pertain to the distribution of products.

4. Compare and contrast decision-making factors that ultimate consumers must make.

5. Type in manuscript form the different ways that various marketing and distribution functions might affect an ultimate consumer.

6. Write and type a personal letter to a regulatory agency which will indicate an awareness of his rights as a consumer and the protections available to him.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Entire class might brainstorm at the typewriter, using an appropriate thought starter, various jobs that they are familiar with that bring goods to the ultimate consumer; i.e., waitress, salesclerks, automobile salesmen, etc.

2. The class will informally discuss the qualifications that they possess which they think will be needed in a selling position. Further, they will discuss disagreeable personality traits that may cause a salesperson's discharge.

3. Group Quest: Dramatize situations that provide opportunities to develop habits and traits that are acceptable in the direct sales or over-the-counter field; i.e., "a good approach," if the article is hot in stock," "closing a sale," etc.

4. Make up an outline for use in evaluation of classroom sales demonstration by the students.

5. Individual or Group Quest: Case problems dealing with the human factor in marketing with suggested solution(s) to the problem(s).

6. Lecture on the various services that make up a channel of distribution, followed by Activity 7.

7. Group Quest: Arrange bulletin board exhibit to show the various services that make up a channel of distribution--transportation, storage, packaging, etc. Have members of the class bring pictures to committee.

8. Select one such occupation and do follow-up work, i.e., interview a salesclerk and find out minimum skills required, salary, etc. Type up interview data in tabulated form. The class could assemble and make up a booklet of occupations. Each student should type a title page and a table of contents for his own copy.

9. Demonstration. Teacher will show students how to type and write up sales slips and other source

Activities -- Continued

documents that are used in the distribution of products--credit memo, etc. (Will also be used for work in D.P.) Individual/group quest: Collect different types of sales slips used in different retail outlets. Display in bulletin board.

10. Type in mailable form with a carbon copy a minimum number of source documents.

11. Make a list of items in their homes that were bought locally but that have manufacturers' names and addresses on them. Have them compute distance the article traveled from point of production to consumer. Tie-in with Mathematics.

12. Group Quest: Have a panel of students from class present a report on their own problems as consumers. The panel may solicit problems from other members of the class in preparing their reports. Tie-in with Home Economics.

13. Group Quest: Panel discussions on "Personality Is an Important Trait for Transportation Employees" and "Advantages and Disadvantages of the Many Transportation Jobs."

14. Class discussion on factors (or selling points) to consider in purchasing a typewriter for classroom use (school as the ultimate consumer).

15. Class discussion on the role that the Regulatory Agencies play in helping the ultimate consumer. Tie-in with Social Studies.

16. Write and type a personal letter to the B.B.B., making a carbon copy to send to appropriate retail outlets, etc. Tie-in with Language Arts.

17. Type items in left-hand column (desk lamp, juice, etc.). After each item place a check mark in appropriate column or columns to indicate which of the five functions usually are performed in marketing the item.

18. Brainstorm occupations for which people are usually required to be licensed. Tie-in with

Activities -- Continued

Social Studies.

19. Individual Quest: Visit retail store and evaluate observable techniques of salesman; prepare an oral/written report.

Materials:

1. Books
   a. Aberle, Sieloff and Mayer. General Business for Today and Tomorrow. Englewood Cliffs, New Jersey: Prentice-Hall, Incorporated, 1959.
   b. Beaumont, John A. and Kathleen Langan. Your Job in Distribution. New York, New York: Gregg Division of McGraw-Hill, 1968.
   c. Crabbe, Ernest H., et al., General Business. Cincinnati, Ohio: South-Western Publishing Company, 1961. (Parts 11 and 12).
   d. Dame, J. Frank, et al., Exploratory Course in Business Training. New York, New York: Gregg Division of McGraw-Hill.
   e. Price, Ray G., et al., General Business for Everyday Life. New York, New York.
   f. Reed, Conover and Stearns. Introduction to Business. Boston, Massachusetts, Allyn and Bacon, Incorporated, 1958.
   g. Russon, Allien R. Business Behavior. Cincinnati, Ohio: South-Western Publishing Company, 1964. (Case Problems 155-158, Activities 3 and 5).
   h. Wingate, John W. and Carroll A. Nolan. Fundamentals of Selling. Cincinnati, Ohio: South-Western Publishing Company, 1955.
2. Pamphlets
   a. Trucks and the Things You'll Want to Know about Them, American Trucking Association, Incorporated, 1424 16th Street, N. W. Washington, D. C. (15 page free booklet).
   b. Facts You Should Know about Our Business Systems and You. National Better Business Bureau, Chrysler Building, New York, New York.
   c. Chain Stores Pro and Con. Public Affairs Council, 40 Rockefeller Plaza, New York.
   d. The National Cash Register Company, Merchants Service, Dayton, Ohio (Bulletin available

Materials -- Continued

pertaining to retail selling).

3. Films
   a. "Along Main Street" (35mm. Free rental) training of sales personnel. Contact nearest office of Coca Cola Bottling Company.
   b. "Wheels of Progress"--trucking (ideal pictures).
   c. "Making that Sale"
   d. "The Better Business Bureau Story," 16mm. (27-1/2 min.) Color. Available from the Better Business Bureau.

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in acquiring desirable personality traits in working with people and in writing up sales slips is important in such occupations as: delivery boy, packer, retail clerks, receiving clerks, customer service manager, cashiers.

HOME ECONOMICS

Purpose:

To help students gain knowledge which will give them a better understanding of marketing and distribution.

To explore ways in which home economics relates to marketing and price relationships.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. State some factors affecting marketing and distribution of foods and clothing.
2. State examples of how geography affects price for some articles in the home.
3. Comprehend the needs and desires of family members relative to nutrition, clothing and household articles.
4. Identify good and bad marketing practices of families and merchants.
5. Demonstrate how inadequate marketing affects prices and family planning relative to budgets.
6. Realize the constant changes in marketing and distribution and the necessity for keeping abreast of these changes as they affect their families.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Make a list of different market places which handle food, clothing, furniture, and household articles.
2. Make a chart or map to show where these are located near their homes. Tie-in with Industrial Arts.
3. Make a table to show whether there are price differences for the same article in different markets. Compute percent difference. Tie-in

Activities -- Continued

with Mathematics.

4. Divide the class into small groups. Group discussion of the reasons for judging quality of products as "better" or "poorer." Have each group make charts and set up a small display showing good and bad articles or products. Show prices on the charts as well as the name of the article. Example: A Group--Good Products; B Group-- Clothing; and C Group-- Household Articles.

5. Play roles of merchants, distributors, and buyers. Tie-in with Language Arts.

6. Resource person: Consultant talk on the business of marketing and distribution. (Set up a display if possible). Have students prepare questions beforehand.

7. Research material on specially assigned topics and how they are distributed; e.g., fruit, meat, etc. Prepare oral/written reports. Tie-in with Language Arts.

8. Record the frequency of shopping done by family members relative to food, clothing and other articles, and prepare charts or tables to show the results.

9. Examine papers and commercials from television and radio, then compare prices advertised at different locations near their homes. Prepare displays of the findings. Tie-in with Mathematics Graphic Arts.

10. Research the means of transportation form the point of distribution to the market and the cost thereof. Prepare displays of the findings. Tie-in with Mathematics, Graphic Arts.

Materials:

1. Construction paper
2. Scissors
3. Printing materials

Materials -- Continued

4. Books, magazines, newspapers
5. Small articles of clothing (socks, sweater)
6. Food products (apples, cabbage, carrots)
7. Toilet articles--soap, shampoo, tooth paste
8. Tables or stands
9. Filmstrips (35mm., color)
   a. "Your World and Money"
   b. "You, the Shopper"
   c. "Spending Your Food Dollars"
   d. "Your Wardrobe and You"
   These filmstrips are available from: Money Management Institute, Household Finance Corporation, Prudent Plaza, Chicago, Illinois 60601
10. Films
    a. "Marketing for Home Product Field" Available from: Association-Sterling Films, 866 Third Avenue, New York, New York 10022.
    b. "Chicken American Style" (3599) 1970--16mm. Sound (18 min.). Projects the Broiler Industry. Available from: Modern Talking Pictures Service, 200 L Street, N. W., Washington, D.C.

INDUSTRIAL ARTS

Purpose: To acquaint the student with the problems that the manufacturer faces in determining the potential demands which will affect his choice of a produce to be made, advertised, and sold in any geographic area.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State the importance of good customer-manufacturer relationships.
2. State several reasons for the importance of good advertising to marketing and distribution research.
3. Explain the possible importance of a specific marketing area to a manufacturing organization.
4. Identify some of the career opportunities available in manufacturing, marketing and distribution.
5. Trace a product from the original source (manufacturer) to the consumer (distribution).

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Individual Quest: Report on a survey dealing with some specific product advertised in a newspaper, magazine, radio or television.
2. Group Quest: Devise a questionnaire and take a random sample of each section on the Minischool of its preference for any given product.
3. Make a chart giving a graphic presentation of the information gained in the survey.
4. Group Quest: Divide the class into three sections to prepare sample copies of advertisements for three different styles of the same product, i.e., shoes of three different styles. Which

Activities -- Continued

style would be selected most often? Why?

5. Discuss the advantages and disadvantages of advertising by mail, flyers, newspapers, or the broadcasting media. Prepare a chart or table summarizing the conclusions.

6. List some common gimmicks (aids) for selling a specific product.

7. Make a bulletin board depicting as many careers as possible in marketing, manufacturing and distribution.

8. List some words of caution that you usually find on packages regarding their proper handling: fragile, this side up, etc.

9. Role play some of the favorable and unfavorable characteristics that you would expect a salesman to possess.

10. List some methods of transporting goods; collaborate to prepare displays of these means.

Materials:

1. Overhead projector
2. Movie projector
3. Handbills
4. Poster boards
5. Crayons or water colors
6. Tags, can, boxes, wrappers
7. Advertising sections of newspapers, magazines
8. Mail order catalogs
9. Pamphlets
10. Films
    a. "Quality and Cost" (1963) 16 mm Sound (15 min.) Kearney and Trecker Corporation Advertising Department, 1100 Theodore Trecker Way, Milwaukee, Wisocnsin 53214
    This film is free, borrower pays return postage. Book one month in advance.

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Marketing and Distribution, INDUSTRIAL ARTS

Notes:

Tie-Ins with other Subject Areas:

Language Arts--writing reports, role-playing, conducting surveys, preparing questionnaires, interview, etc.
Mathematics--tabulating information, analyzing cost for advertising in the various media; estimating printing cost for advertisement, selection of products, price changes, cash or credit terms, delivery schedules, determining weight, size, discounts, etc.
Social Studies--assignment of territories and routes, geographic and climatic factors involved in shipping, potential volume of a special territory.
Business Education--information regarding careers in manufacturing, marketing and distribution, Activity # 7.
Graphic Arts--Design and print a questionnaire, Activity #2.
Art--Activity # 3, # 4, and # 7.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 2 - Food Manufacturing

Topic: Food Manufacturing

Purpose: To develop awareness and knowledge of how foods are processed for use by the consumer, and the many jobs available in food handling and processing

Main Ideas:

1. Many foods are prepared or semiprepared for the consumer's convenience.
2. Urbanization has created a demand for food that is quick to prepare and readily available.
3. Small farm owners find it more expensive to cultivate and distribute foods than large trucking farms which ship directly to processing plants.
4. Efficient and world-wide transportation makes it possible to bring food from one side of the globe to another.
5. Employment of women outside the home has left little or no time for food harvesting and preservation.
6. Improved sanitation and quick methods of food preservation have made it possible to plan and serve meals of a better quality than might be possible with fresh (highly perishable) foods.
7. Through regular inspections and established standards, foods are made safer for consumption. (Regulatory agencies: USDA, ICC, and FDA).

Quests:

1. Visit a grocery store: (a) to find examples of products that have been dated for freshness; (b) visit or request a list from a groceryman of all frozen foods stocked and the various temperatures (degrees) required for proper storage.
2. Research -- find out the preservative agents used in some semiprepared and prepared foods.
3. Process a food at home or in class.

Career Opportunities:

1. Unskilled

   bagger
   busboy

Career Opportunities -- Continued

cafeteria worker
delivery boy
food preparation worker
packer
pantryman
produce worker
stock clerk

2. Semi-skilled

canning company fieldman
cryogenic technician
feed lot operator
fish and poultry worker
food inspector
food processing plant foreman
food and service routeman
pastry cook
refrigerator mechanic
supermarket cashier
truck driver
waiter/waitress

3. Skilled

butcher
caterer
chef
cook
dairy technologist
farm manager
farmer
food technologist
livestock buyer
soil conservationist

4. Professional

agricultural economist
agronomist
bacteriologist
biochemist
biologist

Career Opportunities -- Continued

chemist
dietician
food scientist
geneticist
home economist
home economics teacher
home economics research director
nutritionist

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Food Manufacturing

LANGUAGE ARTS

Purpose:

To realize that foods today are processed in new ways to meet the demands of modern society.

To learn about a variety of jobs related to food processing techniques: canning, freezing, drying, boxing, wrapping, packaging, salting, using additives.

To improve close reading skills by analyzing small print required by law to list ingredients on food labels.

To realize that food distribution is a universal concern.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Describe both orally and in writing the eight basic techniques in food preservation.
2. Explain why new techniques such as frozen and freeze-drying are so popular today.
3. List some of the jobs related to food preparation/distribution.
4. Argue that food distribution is mankind's first concern.
5. Demonstrate analytic reading skill by writing reactions to small print information on a variety of food labels.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Make a Food Book collecting information on this unit:
   a. An abstract for each field trip
   b. A list of jobs suggested in this unit
   c. A list of terms with appropriate definitions for this unit
   d. All paste work
   e. A list or drawings of "Foreign Foods We Like," with pronunciation marks.

   Tie-in with Art.

Activities -- Continued

2. Bring in labels from 5 differently processed foods: paste into Food Book and under each label write whether you think information given is adequate. Tie-in with Home Economics.

3. Share Food Book label entries and critical comments with the class in an audience situation. Tie-in with Science, Home Economics.

4. See films to improve knowledge of processing techniques and to show that food distribution is a world-wide concern:

   a. "Food" (15 min., McGraw Hill)
   b. "Food and People" (25 min., Encyclopedia Britannica Films)
   c. "Why Foods Spoil" (Univ. of Iowa)

   Tie-in with Social Studies. Write reviews of films for Food Book.

5. Individual Quest. Take a camera with 35 mm. film on field trips in this unit: prepare a set of slides with appropriate tape narration. Tie-in with Art.

6. Visit a Giant or the International Safeway: list foods we consume from faraway places. Compare prices of imported vs. domestic foods. Tie-in with Home Economics.

7. Visit local supermarkets and note where common foods used by most families are processed (tomato sauce, salmon, spaghetti, etc.). Tie-in with Social Studies.

8. Present a radio broadcast, "Careers in Foods," in a series of commercial-like blurbs; invite students to choose one of the careers described; e.g., to vote for their career preference(s) of those portrayed.

Materials:

1. Films (see Activity 4 above).
2. Packets of light-colored construction paper or

Materials -- Continued

spiral-bound art books for individuals to make Food Book for this unit. (Write on ordinary paper; paste into large book).

3. Cameras
4. 35 mm film
5. Blank tape cartridges

Notes:

Tie-Ins with Career-Related Skills

Knowledge of jobs in foods, improved visual perception, better reading discrimination

MATHEMATICS

Purpose: To develop an awareness in the student that with all of the different and unusual ways that food is processed today, one must be a wiser shopper. One must have some knowledge of nutritional value of foods versus caloric value of foods versus cost of food in order to satisfy the daily needs of the body and get a good buy.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Find the volume of a rectangular solid necessary to contain a pint, quart, half gallon, and gallon of liquid.

2. Convert common fractions to decimal form.

3. Perform the four fundamental operations with decimal fractions, identifying and using as applicable:

   a. the commutative properties in the operations of addition and multiplication
   b. the distributive property in the operation of multiplication
   c. the multiplicative identity element, one
   d. the additive identity element, zero.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Field trip: Visit the local food market in small groups to observe various ways that the same product is prepared for consumption as well as the quantity of food in various packages and their cost. The students should be introduced to the system of measurements necessary for weighing food if they lack familiarity with them.

2. Compare the cost of goods prepared in different ways, such as the cost of one quart of frozen orange juice and the cost of one quart of squeezed oranges; or the cost of cooked fresh spinach, frozen spinach, and canned spinach.

3. The students are to calculate the cost per ounce and the cost per pound for each item of goods chosen from the store visit.

Activities -- Continued

4. The science teacher is to choose some goods for which the caloric value can be determined in the science laboratory. The students are to find out the different ways that these products are prepared in the store and are to calculate the total number of calories contained in each package for each different means of preparation (fresh, frozen, canned). (The same may be done for nutritional values if appropriate tables are obtained). Tie-in with Science, Home Economics.

5. The teacher and/or students are to obtain data on the caloric value of all of the foods chosen in the store from the home economics teacher and/or science teacher. The students are to calculate the total number of calories contained in each package for each different means of preparation (frozen, fresh, canned) and are to calculate the cost per calorie for each item.

6. The students are to weigh each type of food found in specific TV dinners as well as noting the cost of each different TV dinner. The students are to calculate the cost of the quantity of food found in the TV dinners based on the cost per ounce for each item in the grocery store and are to find the total cost of the TV dinners. The students are to compare the store price for the TV dinner against the cost of preparing their own TV dinners. Use this information to assist in a discussion of the advantages or disadvantages of the woman working outside of the home, possibly in the Social Studies or Language Arts class.

Materials:

1. Information on caloric/nutrional value of various foods.
2. Calorimeter and goods to be tested.
3. Prices of goods in the grocery store.
4. TV dinners.
5. Scale for weighing objects.

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Food Manufacturing (Food Grades and Standards)

SOCIAL STUDIES

Purpose: To have the student learn the role that the Federal government plays in regulating food grades and standards for the benefit and protection of the consumer.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Describe briefly the history of the role played by the Department of Agriculture in the inspection and grading of food.
2. Explain the importance of grading food products.
3. Identify the various labels and grades of selected food items.
4. Discuss the importance or unimportance of brand names.
5. Establish their own standards where government grades and standards are missing.
6. List and discuss some of the job opportunities associated with food processing and its regulation.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Read and discuss with the teacher the relevant points of The Jungle, by Sinclair Lewis.
2. Individual Quest. Research the life and activities of Robert Choate or Ralph Nader. Compare them with other reformers, past and present. Bess Myerson Grant, Betty Furness and Virginia Knauer may also be included.
3. Prepare a bulletin board showing the various types of grades and standards found in consumer items today.
4. Individual Quest. Research and report orally on the Meat Inspection Act and the Pure Food and Drug Act of 1906; the Wholesome Meat Act of 1967, and the Wholesome Poultry Act of 1968. The students may discuss whether these laws fulfill the need

Activities -- Continued

for consumer protection and what additional measures need to be taken.

5. Individual Quest. Read and report orally/in writing on selected items from Consumer Reports. Then a committee will inspect items in local stores and report the price variations.

6. Resource Person: Invite Esther Peterson (Giant Food Stores) to discuss her role in Consumer Affairs.

7. Individual/Group Quests:

   a. "What are some advances in the preservation of foods?"
   b. "What should consumers know about food additives?"
   c. "Will synthetic foods be the foods of the future?"
   d. Prepare menu for astronauts while in space. Why were these foods selected?

8. Make a list of programs sponsored by food companies. Describe the type of advertising or commercials used and determine how much is exaggeration.

9. A committee may make a chart showing the difference in price between name brands and more obscure ones both bearing similar government approval stamps. This will be explained to the class and discussion will follow. Tie-in with Business Education.

10. List needed safeguards that will further protect the consumer from the unscrupulous; prepare a display.

11. Have students compare grade labeling and prices in a low-income neighborhood with those in a more affluent neighborhood. Discuss the findings with the class. Prepare a display of the findings. Tie-in with Business Education.

12. Resource Person: Invite a food inspector from the Department of Agriculture to discuss grades and standards. Follow with a question-and-answer period.

13. Resource Person: Invite a person from Department of Agriculture, Personnel Division, to discuss job

Activities -- Continued

opportunities there.

Materials:

1. Books:

   a. Crabbe, Ernest, et al. General Business for Economic Understanding. New Rochelle, New York: South-Western Publishing Company, 1966.
   b. Linder, Bertram. Economics for Young Adults. New York, New York: W.H. Sandler Company.

2. Pamphlets:

   a. Food Additives. U.S. Department of Health, Education and Welfare. Food and Drug Administration, Washington, D.C. Leaflet #10.
   b. Food Standards. Food and Drug Administration Publication No. 8. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price 15¢.
   c. Gimlin, Joan. Synthetic Food. Editorial Research Reports, 1735 K Street, N.W., Washington, D.C. 20006.
   d. Read the Label. A cartoon-illustrated booklet issued by the Food and Drug Administration. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 20¢ each. 25% discount for 100 or more.
   e. The Story of Food. American Can Company, 100 Park Avenue, New York, New York 10017.
   f. Definition and standards of identity, quality, and/or fill of containers which have been promulgated under the Food and Cosmetics Act are available in the following parts:

      14-Chocolate and cocoa products. 10¢
      15-Cereal flours and related products. 10¢
      16-Macaroni and noodle products. 10¢
      17-Bakery products. 15¢
      18-Milk and cream. 5¢
      19-Cheese and Cheese Products. 25¢
      20-Frozen Desserts (issued by F.D.A.)

Materials -- Continued

22-Food Flavorings (issued by F.D.A.)
25-Dressing for Food (Mayonnaise, French dressing, salad dressing). 5¢
27-Canned Fruit and Canned Fruit Juices. 10¢
29-Fruit Butters, Jellies, Preserves. 15¢
36-Shellfish. 5¢
37-Canned Tuna (issued by F.D.A.)
42-Eggs and Egg Products. 5¢
45-Oleomargarine--Margarine. 5¢
46-Nut Products (Peanut Butter)
51 and 53-Vegetables and Vegetable Products. 15¢

Single copies of the complete text of these standards may be obtained without charge from the Food and Drug Administration. Multiple copies may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

3. Film:

a. "Sounds of Freedom" (1964) 16mm sound, 29 min.
General Mills, Incorporated, 9200 Film Center, 9200 Wayzata Boulevard, Minneapolis, Minnesota 55440
(2 weeks advance notice; borrower pays return postage.)

BUSINESS EDUCATION

Purpose:

To give students an opportunity to become aware of some of the terminology associated with job opportunities available in food handling.

To give students an opportunity to take part in comparative-cost foodshopping exercises.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Compose sentences at the typewriter utilizing in proper context key words relating to the selling and distribution of food products.

2. Compute prices for various food items from multiple pricing data.

3. Type menus in appropriate form, using the same foods processed by different methods so as to incorporate comparative cost data.

4. Discuss in manuscript form at the typewriter the role transportation plays in the distribution of foods.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Brainstorm at the typewriter "Food Stores"--kinds of food stores, foods available in a supermarket, types of jobs available, etc.

2. Quest: Select several different types of food products at a local store and record where they were manufactured. Compare approximate miles transported.

3. Panel discussions, such as:

   a. transportation services involved with food processing and distribution
   b. implications of an integrated farm system
   c. working women's food buying habits in comparison to full-time homemakers' food buying habits
   d. the securing and use of food coupons
   e. advantages and disadvantages of food chain stores

Tie-in with Language Arts.

Activities -- Continued

4. Select specific illustrations of the multiple pricing available at local food stores: calculate price for one item (etc.) from the various examples. Tie-in with Mathematics.

5. Plan a luncheon menu using pre-prepared and/or frozen foods: compute total cost. Plan menu using same foods in a different process: compute cost and compare. Tie-in with Home Economics, Mathematics.

6. Type menus using horizontal and vertical centering.

7. Individual Quest: Interview an employee of a food chain store, an employee of a neighborhood food store, or a food transportation employee to find out what their jobs are like and what chances there are for advancement.

8. Write reviews of any films seen for the Food Book. Add these to Food Book, Language Arts.

Materials:

1. Book:

   a. Beaumont, John A. et al. Your Job in Distribution. New York, New York: Gregg Division McGraw-Hill Book Company, 1968.

2. Newspapers and Pamphlets:

   a. "Conglomerates Reshape Food Supply," The Washington Post, October 3, 1971, (Section A), pp 1, 16.
   b. It's on the Label (single copy). National Canners Association, Home Economics Consumer Association, 1133 20th Street, N.W. Washington, D.C. 20036.
   c. Trucks and the Things You'll Want to Know about Them. American Trucking Association, 1616 P Street, N.W., Washington, D.C. 20036. 15 pages. free.
   d. Food from Farmer to Consumer. Report of the National Commission on Food Marketing, 1966. 203 p. $1.25. Catalog No. Y3.M 21/22: Jan.

Materials -- Continued

1966. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20042.

e. Be a Good Shopper, 1965. 8 p. 5¢ Catalog No. A43.2 Sh. 7 Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

f. Comparative Costs to Consumers of Convenience Foods and Home-Prepared Foods, 1963. 91 p. 55¢ Catalog No. A1.82:609. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

g. Convenience Foods, the Relationship between Sales Volume and Factors Influencing Demand, 1965. 22 p. 15¢ Catalog No. A 93.28. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

h. National Association of Food Chains, Director of Publications, 1725 Eye Street, N.W., Washington, D.C. distributes miscellaneous publications and films on food procurement and distribution.

3. Films:

a. "Food Buying" - Experts comment on TV Viewers Questions, 16 mm. Consumers Union Film Library.

b. "Meat on the Move," 28 min. on free loan telling the story of distributing meat through retail channels. Other miscellaneous publications are available from: Swift and Company, Agricultural Research Division, 115 West Jackson Boulevard, Chicago, Illinois.

c. "Pacesetter in Aisle No. 3," 16 mm. 15 min. Concerns store clerks in supermarkets. General Mills, 9200 Film Center, Wayzata Boulevard, Minneapolis, Minnesota 55440 (borrower pays return postage: advance booking required).

d. "Retailing Fish," 16 mm., 18 min. Display and merchandising methods receive special emphasis. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 1212 Avenue of the Americas, New

Materials -- Continued

York, New York 10036.

e. "Sounds of Freedom," 16 mm. 29 min. Compares methods of food distribution and stores in various countries. General Mills. Address above.

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in computing food prices and becoming aware of the role trucks play in food manufacturing is important in such occupations as: delivery manager, warehouse stock clerk, cashier, stock and record clerk, shipper, loader, and order clerk.

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Food Manufacturing

HOME ECONOMICS

Purpose: To motivate students in gaining knowledge in the field of food manufacturing because of its importance in daily living.

To have the students discover the many important career opportunities in this area.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State which types of food preservation are most/least damaging to food value.
2. List 5-10 occupations in food manufacturing, with qualifications for at least one.
3. List 3-4 reasons why government supervision of industry is required.
4. State generally what grading tells you about food products.
5. Briefly describe history of the industrialization of food processing.
6. Evaluate labels for synthetic materials and additives.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Divide into groups.
   a. Have each group check materials in magazines, books and pamphlets on the history of various food products
   b. Analyze labels on food products for preservatives or other potentially damaging additives
   c. Select three grades--A, B and C, compare the different grades as to appearance, flavor and weight
   d. Make a display of the products with posters illustrating the descriptions
   e. One group analyze canned products, another dried, one fresh (raw), one frozen product.

Activities -- Continued

Have student note losses in food value for each process. Which is most damaging? Which least?

2. Field Trip: Tour a food manufacturing plant, after being instructed to notice occupations involved. Following tour, list all occupations noted.

3. Show films of manufacturing process

   a. Have the students check the various processes of the product shown.
   b. Have students research qualifications for occupations noted.

4. Background of food manufacturing given by the teacher with illustrated posters secured from food manufacturing companies. Have students evaluate need for government supervision, based on how products can be incompletely or incorrectly labeled, need for sanitation, etc.

5. Have each student make a list of the different manufactured foods found in his or her home. Have them check with each other to find out if there are some manufactured foods used by a family which they are not familiar with and would like to try.

6. Teacher prepare unfamiliar foods with the help of the students, and have students sample them.

7. Students check the locations of food factories in the city.

8. Role play one or more occupations involved in food processing.

Materials:

1. Book:

   a. Wright, Carleton. Food Buying. New York, New York: Macmillan, 1962.

2. Bulletins and Pamphlets:

   Coles, Jessie. Consumers Look at Labels.

Materials -- Continued

Greeley, Colorado. Council on Consumer Information, Colorado State College, 1964.

b. Vegetables--Consumer Quality, Yield, Preparation, Time of Various Market Forms. Rep. 17, Washington, D.C. United States Department of Agriculture.

3. Magazines, papers
4. Sample boxes and cans, also packages of food products
5. Labels from food products
6. Cardboard
7. Posters

8. Films:

a. "Grade 'A' All the Way," 1963, 16mm sound, 18 min., Manufacturing Fancy Tomato Juice, Bercut Richards Packing Company, P.O. Box 2470, Sacramento, California 95811.

b. "Bringing Home the Bacon" (2465) 16 mm sound, 22 min. In color--covers the many facets of meat processing, including research, raw materials, seasoning. It shows how smoked meats are processed. (Oscar Mayer and Company) Modern Talking Picture Service, 2000 L Street, N.W., Washington, D.C. 20036.

c. "Now Is the Time" (3229) 16 mm sound, 28 min, Shows the different methods of canning and freezing foods. Modern Talking Picture Service, 2000 L Street, N.W., Washington, D.C. 20036.

d. "The Wonder Land of Bread" (2558) 16 mm, 20 min. (color) Shows wheat in the fields and its travels as it is changed to flour and to a loaf of bread. Modern Talking Picture Service, 2000 L Street, N.W., Washington, D.C. 20036. This should be followed by a discussion of types of bread and relative nutritional value of each.

e. "The Wiener Story" 16mm, 10 min. Describes in detail the actual manufacture of a wiener. Howell and Company, Geo. A. Box 800, Austin, Minnesota 55912.

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INDUSTRIAL ARTS

Purpose: To help the student realize that the industrial product is the result of teamwork. Further, it should make him aware of the need for knowledge of tools, materials, and processes.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify the parts of a problem which involves analysis, tools, materials, and processes in its solution.
2. Identify and apply the elements of good design.
3. Lay out and design a label for a plastic container for frozen potatoes (french fries).
4. Make a silk screen of the design.
5. Set up the silk screen unit and produce the labels on plastic.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Analyze problem of producing a label, and select tools and materials needed to solve the problem.
2. Sketch what he considers to be the best solution to the problem, and justify on basis of elements of design. Tie- in with Art.
3. Make a decision on the use of color in the solution of the problem. Tie-in with Art.
4. Select the size of plastic container needed and indicate the amount of potatoes to be placed in the container. Tie-in with Home Economics.
5. Produce the labels for the container using a silk-screen process.
6. Write a short critique of the finished product.
7. Write a paper on the procedures and processes used in producing the product. Tie-in with Language

Activities -- Continued

Arts, Art, Mathematics, Science.

8. Quest. Choose a product and list the efforts of the following in its production: industrial designer, the engineer, the technician, the craftsman, the service man, the retailer, and the consumer.

9. Resource Person: Arrange to have an industrial designer speak to the class. Have students ask questions prepared in advance.

10. Organize a research team and under the direction of the science teacher, carry out an experiment dealing with plastics and a frozen product. Tie-in with Science.

Materials:

1. Silkscreen Unit
2. Plastic
3. Ink (special for plastic)

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 3 - Data Processing and Automation

Topic: Data Processing and Automation

Purpose: To explore occupations related to constructive use of Data Processing

1. Social Scientists
   a. Space
   b. Medicine
   c. Engineering
2. Statistician
3. Business
4. Military

To broaden concepts of the use of Data Processing with emphasis upon the practical information for the beginning student to permit accurate and efficient use of the basic equipment available in the D.C. Computing Centers.

1. An IBM 1620 Computer
2. The basic auxiliary equipment of key punch, Printer and Sorter.
3. Is interested primarily in the application of this collection of equipment to the statistical analysis of social data.

To explore occupations related to constructive use of Data Processing.

Main Ideas: This is a vital unit by which students will gain the necessary background through independent study, and basic, general, introductory manuals available from machine manufacturers, as well as other data processing materials of other introductory non-machine oriented data processing units; further, they will explore the occupations related to constructive use of Data Processing.

Quests:

1. Talk with your principal or teacher regarding old methods of preparation of work now being done in Data Processing.
2. History of Data Processing.

Career Opportunities

1. Unskilled

auxilary equipment operator
coder
file clerk
maintenance worker
sorter

2. Semi-skilled

billing clerk
bookkeeping machine operator
card-to-tape converter operator
computer repair technician
console operator
data typist
equipment maintenance personnel
keypunch operator
math trainee
systems clerk
tabulating machine operator
tape librarian
verifier operator

3. Skilled

business forms analyst
computer hardware salesman
computer operator
computer operations supervisor
consultant analyst
customer service representative
electrician
tabulating manager
traffic manager

4. Professional

accountant
aerospace engineer
auditor
business manager
educational director
electrical engineer
electronic data processing department manager

Career Opportunities -- Continued

financial analyst
marketing research director
mathematician
statistician
systems analyst

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LANGUAGE ARTS

Purpose: To realize the important role of data processing in modern civilization.

To see how "thinking machines" handle verbal communication data.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Answer the question: Why is data processing pivotal to modern life?
2. List ten (10) careers related to data processing.
3. Diagram the binary construct of "thinking machines."
4. Explain the similarity between the computer and the human nervous system, preferably using simple diagrams.
5. Efficiently take single-word notes from oral and written discourse as an electronic pulsator might.
6. Tell what transformational grammar is and how it is related to machine translation of languages.
7. Explain what people mean when they say, "These machines talk to us."
8. Show 80% accuracy in spelling and defining the technical vocabulary of the unit.

Acitivties: To accomplish the objectives, the student may engage in activities such as:

1. Select any automated toy: talking doll; battery operated car; etc., and explain how the mechanism works in an oral report to the class. Tie-in with Science.
2. View films on computers and data processing: (from U. of Iowa)

Activities -- Continued

a. "Automation"
b. "Man on the Assembly Line"
c. "Electronic Computers and Applied Mathematics"
d. "The Electronic Technician"
e. "Thinking Machines"
f. "Communications"
g. "A Communications Primer"

Write brief reviews of each film and exchange by pairs for comparison.

3. Take notes from a teacher presentation on transformational grammar; submit for teacher evaluation.

4. Take a spelling/vocabulary test on the following technical terms at the end of work in this unit:

audio tape	electronic circuit
audiologist	electronic pulsator
automation	electronic technician
calculator	encoding
computer language	input/output
computer program	keypunch operator
data processing	robot
debate	sorter
decoding	video tape

5. Participate in a symposium on the similarity between the computer and the human mind (nervous system), or attend the symposium and write a news item about it. Tie-in with Science.

6. Quest: Build an original automated artifact. Tie-in with Science, Mathematics, Industrial Arts.

7. Quest: Write a report (use World Book Encyclopedia) on famous people in transformational grammar such as Noam Chomsky or Paul Roberts.

8. Quest: Make a paper model of a small computer. Tie-in with Science, Mathematics, Industrial Arts.

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Data Processing and Automation, LANGUAGE ARTS

Materials:

1. Tape cartridge for teacher to tape lecture on transformational grammar.
2. Ditto masters/paper for tests on spelling and vocabulary.
3. Colored notebook paper to stimulate efficient one-word notetaking.
4. Films (see Activity 2).

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in filing, operating electronic equipment and coding is invaluable in such careers as translators, interpreters, audiologists, speech pathologists, teachers, newspaper reporters, office machine operators, technical writers, receptionists, etc.

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MATHEMATICS

Purpose: This unit will concern itself with the elementary arithmetic involved with the computer. Although time-sharing computer terminals are quite popular today, they still require computer programmers who maintain hands-on experiences with the physical computer. These computer programmers require knowledge of base 2, base 8, and base 16.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Convert base ten (decimal) numerals to base 2 (binary), base 8 (octal), and base 16 (hexadecimal).

2. Add, subtract, multiply, and divide in bases two, eight, and sixteen.

3. Convert base 2 to base 8, base 2 to base 16, base 16 to base 2, and base 8 to base 2.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. The Industrial Arts teacher is to assist the students in making the following ounce weights (1,2,4,8,16,32). The students are to use these weights to weigh objects of varying weights. The teacher and/or students are to make charts in the image of place value charts. After weighing each object, the students are to indicate how many ounces the object weighs and what weights were used by placing a 1 or 0 on the chart under the proper value. The teacher is to point out that this is the process for converting base 10 numbers to base 2 numbers. The place values are the weights and the digits are the number of weights. Weights should also be made for base 8 (1 and 8 oz. weights, 7 each) and base 16 (15 each 1 oz. and 16 oz.). The students should weigh all objects in all three systems to show equivalent numerals in the three systems. Tie-in with Industrial Arts.

Activities -- Continued

2. The students are now to convert numbers from base 10 to base 2 and vice versa.

3. The students are to make addition and multiplication tables for base 2, base 8, and base 16 and perform these operations in each base.

4. The teacher is to show the students the unique relationship between base 8 and base 2 and base 16 and base 2: that is, $7=111_2$ is the highest digit in base 8 so that $100110111_2 = 100/11-/111_2$ or 467_8; $4 = 100_2$ $6 = 110_2$; $7 = 111_2$. Conversion from base 2 to base 8 is a matter of grouping the base 2 number into groups of three digits and replacing the three digits by a single digit. For base 16, four binary digits are equivalent to one base 16 digit: that is $100110111_2 = 1/0011/0111_2$ or 137_{16}, $1 = 1_2$; $3 = 0011_2$; $7 = 0111_2$. This conversion is the same as base 8 conversion except that four digits are involved. (It should be noted that $467_8 = 137_{16} = 311$).

5. The mathematics and language arts teacher may prepare computer words of 32 and/or 36 bits (binary digits) with pre-labeled bits to contain certain information. The students will indicate the information that is contained in the computer work in mathematics and will write a report on the results of his findings in the English class. For example, in a 36-bit work, it might be labeled as follows:

Bits		
1 - 4	Hour)	Departure Time
5 - 8	Minutes)	
9 - 12	Hour)	Arrival Time
13 - 16	Minutes)	
17	AM or PM	
18 - 21	Month)	Date of Flight
22 - 26	Day)	
27 - 29	Flight Number	
30 - 32	Flight Departure/Destination	

Activities -- Continued

33 Take-off
34 On Course
35 Landing
36 On schedule

Tie-in with Language Arts.

6. The teacher and students may prepare messages in teletype as they relate to the binary system. The students may prepare messages and send them to other students to decode or translate. The English teacher might prepare sentences in proper English or possibly short paragraphs to be converted into teletype. Tie-in with Language Arts.

Materials:

1. Wood
2. Two-pan balance for weighing
3. Numeration System Demonstrator
4. Numbers 7567 and 7567A
   Available from: Sargent-Welch Scientific Co.
   35 Stein Avenue
   Springfield, New Jersey 07081
   Telephone: (201) 376-7050.
5. Books
   a. Gechtman, Murray and James Hardesty. Arithmetic: Concepts and Skills. New York, New York: Macmillan Company, 1968.
   b. Peterson, John and Joseph Hashisaki. Theory of Arithmetic. New York, New York: John Wiley and Sons, 1971.
6. Films
   a. "Modern Junior High School Mathematics -- Set 2" (McGraw-Hill Producer)
   b. "Mathematics for Computers: the Binary System" Educational Record Sales, 157 Chambers Street, New York, New York 10007.

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SCIENCE

Purpose: To make some of the electrical, magnetic, and mechanical principles of the computer more tangible and realistic to the pupils through experimentation.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Wire a simple electric circuit form a schematic diagram.
2. Explain how punches in a card are transferred to electric signals in a computer.
3. Explain the relationship between magnetism and electricity and how a change in one causes a change in the other.
4. Wire up a simple "AND" electric circuit and explain its principle.
5. Wire up a simple "EITHER-OR" electric circuit and explain its principle.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Teacher demonstration and hands-on experience Provide pupils with a simple circuit diagram consisting of a light bulb (1-1/2 V.), socket, dry cell (1-1/2 V), wire, and knife-blade switch.

   a. Explain the symbols.
   b. Have them connect the parts so as to be able to turn the light on and off with the switch.
   c. Review the theory of electron flow.
   d. Explain how the circuit with the switch open is a "zero" or "no" condition and the circuit with the switch closed is a "one" or "yes" condition.

Activities -- Continued

Tie-in with Mathematics, binary system and Industrial Arts.

2. Continuation. Pupils replace the switch with two wires bent and placed in the circuit. Punch a hole in a 3 x 5 card or old IBM card. Pass the card between the wires. When the "hole" passes the wires the circuit will be completed and the bulb will light. The hole allows a "one" or "yes" condition.

3. Have pupils discover the relationship between magnetism and electricity by:

   a. passing a magnet through a coil of wire attached to a galvanometer. (Give pupils the circuit diagram and have them hook it up.) Make and record careful and complete observations.
   b. Passing an electric current through a wire with a magnetic compass placed underneath the wire for a second of time. (Note the deflection of the needle). Pupils state the effect of current flow on a magnetic field.

4. Continuation. Summarize these relationship as a class. Relate this to the storage of "zeros" or "ones" in a computer memory made up of ferromagnetic cores interlaced by current-carrying wires.

5. (Use half of the class for this while the other half work on Activity 6) Provide each team of 4 pupils with a circuit diagram for an "AND" condition (two knife-blade switches in series with a bulb and dry cell):

Have them wire this arrangement from the diagram and show how it can satisfy these conditions: To qualify for this job you must be:

Activities -- Continued

(1) 16 years of age and (2) a sophomore enrolled in a D. C. School.

Have pupils make up other "AND" conditions of employment, promotion, team qualifications, etc. Relate to Guidance, Social Studies.

6. (Use the other half of the class on this experiment while the first half is working on the "AND" condition.) Provide each team of four pupils with a circuit diagram for an "EITHER-OR" circuit (two knife-blade switches in parallel with a bulb and dry cell):

Have them wire this arrangement from the diagram and show how it satisfied these conditions: You can qualify as a mechanic with this service department if you have either (1) two years of technical school after high school graduation, or (2) three years of training in the automotive industry as a mechanic's helper.

Have pupils make up other "EITHER-OR" circumstances of life and show how the bulb will light when either switch is closed. Relate to Guidance, Social Studies.

7. Let a team from the "AND" circuitry group explain their conditions and circuit to the "EITHER-OR" group and vice versa.

8. Test pupils using both practical circuitry and schematic drawings. Relate to the binary "0" and "1" condition.

Materials:

1. Books
   a. Kenyon, Raymond G. I Can Learn About Calculators and Computers. New York, New York: Harper and Brothers, 1961. It contains excellent

Materials -- Continued

diagrams for making simple digital and analog calculators.

b. Vorwald, Alan and Frank Clark. Computers from Sand Table to Electronic Brain. New York, New York: Whittlesey House, McGraw-Hill Book Company, 1961. Chapter 9: "Computer Talk," and Chapter 10: "Writing-Input, Reading-Output" have excellent diagrams for electrical wirings.

c. "Binary System." World Book, 1970, II, p. 23.

d. "Computer Memory." World Book, 1970, IV, p. 74.

2. Films (D. C. Public Library)
   a. "Introduction to Feedback, Eames, 1960, 11 min. Color.
   b. "Memory Devices." Bell Telephone, 1960, 28 min. Color. It is excellent also on binary.
   c. "Symbolic Control." IITRI, 1965, 16 min. Color. Shows control of machine tools and concepts involved in computers.
3. 16 knife-blade switches
4. 16 1-1/2 volt dry cells
5. 16 size D battery holders
6. 16 1-1/2 V. bulbs and screw-base sockets
7. 1 roll bell wire
8. 8 small screw drivers or equivalent
9. 8 Bar or horseshoe magnets
10. 8 small magnetic compasses.

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SOCIAL STUDIES

Purpose: To forewarn the students of the growth of automation and its effects on possible career choices in the future so as not to be adversely affected by technological advances.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List and describe briefly some of the effects of automation on our daily lives.
2. Cite examples of how people in the past have reacted to change.
3. State the advantages and disadvantages of automation in reference to specific situations.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Discuss the meaning of automation and give examples of its present use.
2. Draw or collect cartoons illustrating some forms of automation; prepare a mini-school display. Tie-in with Art.
3. Quest: Read and pantomine the poem about "John Henry" who struggled against the machine. Tie-in with Language Arts.
4. Make a list and discuss the changes that have met resistance by (a) the public, (b) the special interest groups, and (c) others.
5. Resource person: Computer specialist to discuss: "In what ways is a computer like a human?" "In what ways is it not?" Tie-in with Science.
6. Teacher-led group discussion: George Meany, President of AFL-CIO, has stated: "Automation is a real curse to society; it could bring us to a national catastrophe." Do you agree?

Activities -- Continued

Explain your answer.

7. Group Quest: Have a committee research the effects of automation on coal mining; another committee research the plight of the inhabitants of Appalachia.

8. Individual Group Quest: Research and report on government programs that have been developed to combat unemployment brought about by automation. Note: "Job Guarantee" -- Write United Mine Workers for description of agreement with Kaiser Steel Corporation whereby employees share in the increased profits of automation. Also, read and discuss the Research Manpower Development and Training Act of 1962 and Economic Opportunity Act of 1964.

9. Group Quest: Develop a skit illustrating life before and after automation. (See TV cartoon "The Jetsons," and discuss it in relation to automation). Tie-in with Language Arts.

10. Resource person: The manager of a plant that has recently been automated responds to a student questionnaire. The questionnaire should include the following questions:

11. a. Description of machines installed
    b. Number of people displaced
    c. Retraining required
    d. What kinds of jobs were created as a result of automation?
    e. What kinds of jobs were lost as a result of automation?

    Tie-in with Language Arts.

11. List some computer training centers in Washington, D. C. Find out their location and types of training. Prepare a display or brochure. Tie-in with Art, Language Arts.

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Material:

1. Books
   a. Crabbe, Ernest H. et al. General Business for Economic Understanding. New Rochelle, New York: South-Western Publishing Company, 1966.
   b. Kreps, Juanita M. Automation and Employment. New York, New York: Holt, Rinehart and Winston, Incorporated, 1964.
   c. Linder, Bertram. Economics for Young Adults. New York, New York: W. H. Sadler, Incorporated, 1971, p. 219ff.
   d. Schon, Donald. Technology and Change. (The impact of invention and innovation on American social and economic development). A Seymour Lawrence Book, Delacorte Press, New York, New York.
   e. Smith, Augustus H. et al. Economics for our Times. New York, New York: McGraw-Hill Book Company, Incorporated, pp. 67-68, 73, 147, 573.
2. Films
   a. "The Catalyst." (This film depicts UNIVAC's real-time capabilities. It portrays the action of a catalyst working to effect harmony between mankind and the universe. The catalyst is a computer created by UNIVAC Applications in the film include: Apollo; anti-submarine warfare; air traffic control; global weather forecasting; medical research and education.)
   b. "Census Sixty." (This film tells the story of the 1960 Census. It presents a humorous and effective explanation of the tremendous job involved in the collection of the material and of the processing of the material after collection. It shows how electronic computers were used to complete the job).
   c. "Census '70." (This film in full color consists of two parts, running time 5 minutes each. It was produced in collaboration with the U. S. Bureau of the Census, and features several close-up views of UNIVAC equipment and its various functions.)
3. Map of Washington, D. C.
4. Yellow pages of the Telephone Directory.

Notes:

Examples of automation:

1. thermostat
2. automatic gearshift in automobiles
3. dial telephone

Use in factories:

1. Automobile plants--automatically controlled presses are used to form the tops of automobiles in one operation.
2. Ball Point Pens--precision machines automatically perform 36 operations in assembling the ball and the tip.
3. Offices--many offices use automatic machines and equipment to process data and to prepare business reports.
4. Banks--check sorters read figures printed on checks with magnetic ink and sort the checks at the rate of over 50,000 per hour.

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HOME ECONOMICS

Purpose: To provide the students with some knowledge of the role of data processing and automation in home economics.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify some practical ways in which automation may be used in everyday activities and future careers.
2. Make intelligent choices relating home economics and automation.
3. Cite examples to indicate the increased importance of data processing and automation to home economics.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Individual Quest: Look up the meaning of data processing and automation and give a brief oral report to the class.
2. Teacher-led discussion on how data processing helps in the field of home economics and in the home. Compile a list during the discussion.
3. Have students discover where and how automation is used at home, by preparing a written list.
4. Field Trip: Visit the Washington Gas Company to see how data processing and/or automation is used in its home economics demonstration center. Prepare a news item reporting the trip.
5. Group Quest: Have students cut pictures from magazines of automatic appliances which are used in the home and in business. Make a collage displaying related appliances in the same group. For example:

Activities -- Continued

a. automatic dish washer and automatic range with a timer.
b. automatic razor, hair dryer, etc.
c. data processing helping with plans relative to weddings, timing, etc.
d. devices used in saving space in a research library or laboratory.

Materials:

1. Business and Home Economics Magazines and publications

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BUSINESS EDUCATION

Purpose:

To explore occupations related to data processing in business.

To give students an opportunity to perform certain clerical skills that directly relate to the digital computer.

To give students an opportunity to see how the computer has modified and/or changed the role of clerical workers.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Record sales data from source documents to punched cards either by using a keypunch machine or a simulated method.
2. Design appropriate fields for data recorded on such source documents as price tickets, sales tallies, purchase orders, or other office forms typed or collected in the marketing cluster.
3. Type index cards and bibliography pages incorporating data pertaining to business occupations in data processing.
4. Compare and contrast ways in which data can be processed by office workers by performing manual operations versus automated operations.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Distribute keypunch cards; demonstrate how students can record their names on their cards.
2. Show film and/or filmstrip (see materials). Follow by a discussion period.
3. Typing exercises emphasizing total accuracy, particularly numerical data.

Activities -- Continued

4. Group Quest: Manually classify and sort forms typed and/or collected from retail outlets in the marketing and distribution topic; design appropriate fields for coding data on punched cards.

5. Group Quest: Bring to class newspaper ads for jobs in data processing; type data on index cards.

6. Group Quest: Use library to research articles and books written on the use of data processing in business. Data may later be typed in bibliographic form. Tie-in with Language Arts.

7. Individual/group Quest: Visit an installation of keypunch equipment and/or other input/output equipment.

Materials:

1. Automated Office Practice Set, Southwestern Publishing Company.
2. Blendon, Edward G. and Barbara H. Nalepa. Quick Survey Course in Forms Typing. New York, New York: Gregg Division, McGraw-Hill Book Company, Facsimile edition, 05891.
3. Future Data Processors (156.2), Your Career in Data Processing. Data Processing Management Association, International Headquarters (156.4), 505 Busse Highway, Park Ridge, Illinois 60068.
4. Gentle, Edgar (ed.). Data Communications in Business, New York, New York: American Telephone and Telegraph Company, 1965.
5. Robichaud, Beryl. Understanding Modern Business Data Processing. New York, New York: Gregg Division, McGraw-Hill Book Company, 1966.

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in coding data from source documents to computer input media is important in such occupations as: keypunch operator, tabulating machine operator, computer,

Notes -- Continued

bookkeeping machine operator, marksensing coders, business machine operators and programmers.

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Data Processing and Automation

INDUSTRIAL ARTS

Purpose: To introduce the student to the many opportunities made available through data processing and automation and to make him more aware of the impact of automated/electronic data processing (ADP,EDP) on the handling of information.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List the basic data processing systems.
2. Describe briefly the historical development of data processing systems, emphasizing key events.
3. List some of the data processing and automation applications to industry.
4. List some of the job opportunities made available through data processing and automation and describe one of these.
5. List training needed for various (data processing) jobs.

Activities: To accomplish the objectives the student may engage in activities such as:

1. High Impact. Sponsor a Career Day Conference and invite people from McArdle, PEPCO, and C & P Telephone Cmmpany.
2. Quest: Prepare a research paper on the basic data processing systems.
3. Field Trip: Visit the District of Columbia Public School System's Computer Section.
4. Field Trip: Visit and interview computer instructors at the Washington Technical Institute as well as local industries such as ITT and IBM.
5. View films and slides of the data processing

Activities -- Continued

industry. Write a review of at least one.

6. Group Quest: Make a school survey to ascertain the local use made of data processing.

7. Prepare an oral/written report on use of data processing from articles found in Wall Street Journal, Time, Newsweek, etc. Tie-in with Language Arts.

8. Resource Person(s): Invite parents who work with computers, etc. to talk to the class or Minischool.

9. Quest: Have interested students prepare class reports on the applications of data processing to industry, banking, hospitals, government and insurance companies. Tie-in with Business Education.

10. Quest: Compare interests, responsibilities, skills, education, rewards of the various categories of personnel in data processing. Seek the aid of your counselor. Tie-in with Guidance.

11. Graphically construct a data processing system. Tie-in with Mathematics, Science.

12. Have the students research any of the following words which they feel unsure of:

calculator
collator
coding
digit selectors
co-selectors
sorters
key
interpreters
printers
pilot selectors
input data
spacing
overflow
skipping
verifier
zero print control
gang punch
mark sensing
merging
matching
sequence checking

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Data Processing and Automation, INDUSTRIAL ARTS

Materials:

1. Films - Advance booking required.
   Borrower pays return postage.
   a. "Computer Aided Airfoil Design" (1967) 16mm, Sound, 7 min. Lockheed-Georgia Company, Motion Picture Film Library, Zone 30, B-2 Building, Marietta, Georgia
   b. "Moment of Progress" (1963) 16mm, 20 min. Didde-Glaser, Incorporated, Mr. Leslie A. Neff, Supervisor Training and Development, 1200 Graphic Arts Road Emporia, Kansas 66801.
   c. "Careers in Business Data Processing" 16mm, Color Film Distribution Division, Department of Cinema University of Southern California, University Park, Los Angeles, California 90007
   d. "Audio-Visual Aid for Data Processing Systems and Automation," Park Ridge, Illinois. Data Processing Management Association, 1963 (An annotated list of filmstrips and movies.)
   e. "Automation Office Practice," Book and Practice Set; S. J. and E. E. Wanous, Southwest Publishing Company, Chicago, Illinois
2. Projector
3. Job descriptions
4. Screen
5. Books
   a. Encyclopedia Americana, Vol. 8, 575 Lexington Avenue, New York, New York 18082, 1969.
   b. Oakford. Introduction to Electronic Data Processing. McGraw-Hill.
   c. Wenner, J. A High School Orientation Course in Data Processing. Chicago, Illinois: Southwestern Publishing Company 1966.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 4 - Administration, Management, and Labor

Topic: Administration, Management, and Labor

Purpose: To develop an understanding of the terms Administration, Management, and Labor.

To explore occupational opportunities in Administration, Management, and Labor.

To broaden students' concepts of Administration, Management, and Labor.

Main Ideas: Every organization must have a "boss" to manage the business and supervise the work of other people. Administration and Management positions are challenging and exciting because they are jobs which carry a lot of responsibility and an opportunity to use one's own initiative.

1. Administration and management are not terms related to business ownership only.
2. Administration and management positions are becoming more available.
3. The educational requirements for administration and management positions are changing.
4. Administration and management positions are not limited to males.
5. Many people manage their own businesses.
6. On-the-job training makes it possible to advance from jobs in labor to managerial and administrative positions.

Quests:

1. Secure permission through all channels for setting up a variety store within Minischool.
2. If permission is granted, students will set up and manage the school's store.
3. Students can set up mock businesses and prepare a folder on the management of this business.

Career Opportunities:

1. Unskilled

   factory worker

Career Opportunities -- Continued

2. Semi-skilled

administrative assistant
manager trainee
personnel worker

3. SKilled

assistant-to positions
budget management analyst
civil service workers
clerical supervisor
collective-bargaining personnel
controller
executive secretary
foreman, factory
industrial relations officer
labor relations workers
middle management positions
office manager
personnel officer
plant manager
plant superintendent
purchasing agent
service manager
supervisor
training director

4. Professional

accountant
actuaries
behavioral scientist
chairman of the board
college instructors (public administration and business management)
company president
city manager
executive vice-president of a company
industrial psychologist
sociologist
top management positions

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations Administration, Management and Labor

LANGUAGE ARTS

Purpose:

To explain the roles of administration/management/supervision as they relate to manufacturing, marketing and distribution of goods.

To learn respect for persons who exercise managerial roles.

To become aware of the human relationship aspect of this topic.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Describe the general work of managers or supervisors who deal with making and moving goods.

2. Roleplay in supervisor/worker situations, showing appreciation for the kinds of tasks managers have to do.

3. Write film critiques that identify human relationships in a job situation.

4. Organize list of words and phrases used in supervisor/worker relationships that (a) promote harmony (b) increase tension.

5. Spell the vocabulary for this unit and match words with their definitions.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. View films on the nature of managerial positions in making and moving goods; write a review of at least one. (Available from U. of Iowa)

   a. "What is Business?"
   b. "Nature of a Corporation"
   c. "History of Labor Unions in the USA"

   Tie-in with Social Studies, Business Education.

Activities -- Continued

2. Do research writeups on roles of managers in industry and business.

3. View films on supervisor/worker relationships; write a review of at least one: (Available from U.of Iowa)

   a. "Styles of Leadership"
   b. "Supervising Workers on the Job"
   c. "Working Together"
   d. "First Impressions"

4. Write skits and/or roleplay (divide class into several small groups) on supervisory behavior such as:

   a. Worker is frequently late: what does the supervisor say?
   b. Supervisor wants to compliment "Miss Efficiency" without antagonizing others. Give examples.
   c. Manager wants to reward an employee for effort and productivity, but does not have money for a raise. Give alternatives for rewards.
   d. Other problems/situations created by the students.

5. View films on language and human relationships: (U.of Iowa)

   a. "How to Give and Take Instructions"
   b. "Say What You Mean"
   c. "That's Not My Job!"
   d. "Office Courtesy"
   e. "Office Etiquette"
   f. "Office Teamwork"

   Then, write film critiques that bring out the language used by supervisors and workers to keep human relations smooth.

Activities -- Continued

6. Make lists of words and phrases that promote harmony in manager-worker relationships; make lists that might increase tension or strain relationships.

7. Use notebooks and copy technical terms and jobs suggested in this unit: add definitions or synonyms at the teacher's suggestion.

Materials:

1. Films (See Activities 1, 3 and 5)
2. English notebooks
3. Dittoed list of technical terms and jobs in this unit.
4. Teacher-constructed test.

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Administration, Management and Labor

MATHEMATICS

Purpose: People frequently admit that mathematics is important but they rarely seriously consider it as such. Personnel work, for example, involves the four basic operations and percents. It is the intent of this unit to show how mathematics is useful in personnel work.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Perform the four fundamental operations with common and decimal fractions.

2. Solve verbal problems in percentage, including such areas as taxes.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. The teacher is to prepare a list of salaries that an employer might pay his employees ranging among professional, blue collar, and other type personnel. The students are to calculate the net salary of each employee in math class and to prepare payroll statements in business class. Tie-in with Business Education.

2. The teacher is to increase some of the employees' salaries. The students are to calculate the new payroll deduction information and prepare new payroll statements.

3. The students are to calculate the amount of salary or wages per day and per hour for each employee and to prepare a list with each employee's information on it. The students are to calculate part-time payment for some employees as designated by the teacher.

4. The teacher is to designate certain employees as receiving payment for night differential for various fixed numbers of hours. The students are to calculate each employee's night differential payment. The students are also to prepare payroll statements with the night differential payment included.

Activities -- Continued

5. The teacher is to designate certain employees as receiving overtime (OT) payment. The students are to calculate overtime payment for the employees designated and to prepare a payroll statement with the overtime pay included.

6. The student is to calculate the percent of each employee's income that is spent on health insurance, life insurance, and both insurances (distributive law).

7. The student is to calculate the yearly cost of life and health insurance to employer.

Materials:

1. Payroll deduction information
2. Tax rate for city and state deductions
3. Various health insurance plan costs
4. Life insurance costs
5. FICA deduction
6. Retirement deduction rate

Notes:

1. The relationship between these tasks and data processing and automation should be pointed out.

SCIENCE

Purpose: To perceive and analyze the roles played by members of the class in the conduct of group laboratory experiments and exercises. To grow in understanding of the characteristics desirable in a good project-leader.

To see the dominant role contested for in animal behavior.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State some leadership characteristics in peers.
2. Assess own characteristics for leadership.
3. Identify and play certain psychological roles in the group process.
4. List some desirable characteristics of a leader based on own experiences.
5. Give at least one example of the contest for the dominant role among animals of the same species.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Teacher-led discussion and film. Discuss with pupils the characteristics of a good "boss" based on their experiences with good teachers they have had, and good bosses their parents have mentioned. List desirable characteristics. Show one of the films in the references at the end of this unit.

2. Formal Investigation of Group Behavior. Divide the class into four groups to work on four separate laboratory experiments. Instruct each group to select a leader or boss who will have complete power to direct the group, a recorder to keep careful notes, observers of the experiment, researchers to look up supporting data, a writer to draw up the conclusions to the experiment in final form, and other

Activities -- Continued

persons to do tasks as the chairman sees the need. One or two persons should act as non-participating judge(s) to rate each of the persons on how well he does his assignment.

3. Continuation. Show the groups four experimental setups to work with in which the problem has been stated and the directions for operating the apparatus are clear. The teacher should circulate around the room during these investigations but only to clarify directions. Don't give any help or interfere with the group process. Each team is to work the apparatus, make observations, record data, make hypotheses, and come to a conclusion. Different members of the team may leave their assigned roles momentarily to take a turn working the apparatus.

   The four experimental setups are*

The Exploding Can	The Ammonia Fountain
Hero's Fountain	The Cartesian Diver

   * See 7th grade Course of Study

   This apparatus will have to be assembled in advance of the class so that it is ready to operate.

4. Continuation. On completion of the experiments the team should make sure a conclusion is written from input by the group members and ready to be reported. The judge should then report in an impartial fashion how well each member seemed to carry out his assignment. Every member of the group should rate the group leader on a private rating sheet and pass it to the teacher.

5. Replication. If time permits, have the groups rotate to a new experiment and re-elect the leader and other positions in the group. Have each group do the new experiment as before, and re-evaluate the performance of individuals.

Activities -- Continued

6. Teacher-led culminating discussion. At the end of these experiences the teacher should summarize with the class the most frequently listed good characteristics of the "boss" in these situations. Also tell how many times certain bosses were re-elected. The teacher may offer to counsel privately with each elected group leader as to how his peers rated him, at least giving his strong points. Use discretion here. This information might be valuable for the school counselor. Tie-in with Social Studies.

7. Optional procedure for Activity 2. A variation on electing members of the group is to assign roles for members to play. A list of stereo-typed roles are:

Boss Betty	Silent Sam
Nervous Nellie	Fighting Freddie
Dominant Delores	Darling Deena
Helpful Howard	Nosey Nancy
Know-it-all Norris	Noisy Nathan
Chatty Cathy	Wise William
Side-track Suzie	Etc.

8. Report the Findings. Give each group boss or his appointed reporter the opportunity to report the conclusion of the experiment(s). List conclusions. Mark which are correct. Ask for analysis of the work which produced correct conclusions. Have student write or describe orally the advantages/disadvantages of having clearly specified tasks for group members.

9. View films on the dominance struggle among social animals (See film list). Discuss the biological-psychological drives for leadership in the animal world. Discuss.

   a. Pecking order among chickens.
   b. Is pecking order observable among flocks of pigeons?
   c. The territorial imperative.

Activities -- Continued

d. The effects of isolation on a monkey.
e. The mother-substitute among monkeys.
f. The effect of holding vs. non-holding of the human infant.

Tie-in with Social Studies, Home Economics.

Materials:

1. Books:
   a. Fedder, Ruth. Girl Grows Up. New York: Mc-Graw-Hill, 1957.
   b. Menninger, William C. How You Grow Up. 1957.
   c. Smaridge, Norah. Looking at You. 1962.
   d. Archer, Elsie. Let's Face It: The Guide to Good Grooming for Girls of Color. Lippincott, 1968.
   e. Beery, Mary. Manners Made Easy. New York, New York: McGraw-Hill, 1966.
   f. _____. Young Teens Away from Home. New York, New York: McGraw-Hill, 1966.
   g. Betz, Betty. Your Manners Are Showing, 1946.
   h. Lee, Tina. Manners to Grow On. A How-to-Do Book for Boys and Girls, 1955.
2. Films
   (from D.C. Public Library)
   a. "Communications." McGraw-Hill (a) 1953, 13 min. Lack of information at a factory leads to a slump in morale until the new situation is explained.
   b. "Making Friends." EBF, 1954, 10 min. (jh-h) stresses sincerity, loyalty, and consideration.
   c. "Man Who Knows It All." NET, Indiana University, 1955, 30 min. (h-a). Shows how "allness" hinders learning and causes tension.
   d. "Emotional Styles in Human Behavior." University of California, 1962, 30 min., (h-a). A variety of personnel problems can be aided by understanding emotional styles.
   e. "The Extra Step." AT&T/CSC, 1966, 30 min., color, (h-a) emphasizes the need for conscientious public service.
   f. "Follow the Leader." Strauss, 1966, 11 min., color, animated. Shows how to be a good supervisor or a bad one.
   g. "How Good Is a Good Guy?" Roundtable, 1960, 20 min., (h-a). A supervisor's failure to fulfill his responsibilities.

Materials -- Continued

(from Prince Georges County Regional Library)

a. "Social Behavior in Chickens" BSCS. Single topic inquiry film. (Shows pecking order).
b. "More Than Words," 1959, 13 min. color. Animation and live action.
c. "Road Blocks to Communication," Knowles, Malcolm, 1961, 30 min., B/W.
d. "Behavior: Conduct of Life"

3. Metal can with a snugly fitting lid.
4. Assorted flasks and glass tubing.
5. 1,000 ml. graduate or a tall cylindrical glass vessel.
6. Rubber dam or other flexible sheet material. (a piece of inner tube might do)

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Administration, Management and Labor (Forms of Business Organizations)

SOCIAL STUDIES

Purpose: To have students learn the various forms of business organizations.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List, compare, and contrast individual proprietorship, partnership, and incorporation as forms of business organization.

2. Describe briefly conditions necessary for successful formation of a business and state factors that have impeded the development of black-owned businesses.

3. Match the following terms with their definitions:

capital	stock
capitalism	shareowner (stockholder)
dividend	underwriting
expenses	marketability
investor	free enterprise
profit	cooperatives

Activities: To accomplish the objectives, the student may engage in activities such as:

1. View film listed in Materials below. Then, research introductory economics texts and other sources to compile information about the three forms of business organization listed in Objective 1.

2. Group Quest: Prepare displays comparing and contrasting these.

3. Research various sources to obtain data on the probability of successes and failures in new businesses and the conditions and factors associated with success. Tie-in with Mathematics.

4. Resource person: Have a qualified person speak on the subject of difficulties facing Black entrepreneurs, perhaps with focus on a specific area: e.g., Metro.

Activities -- Continued

5. Quest: Team of students can research the problem of what would be required to start a small business in their own community, using various examples (laundromat, drug stores, etc.). Interviews with community-based proprietors should be included, particularly Black entrepreneurs. A survey should be made of needed businesses. Tie-in with Mathematics, Social Studies.

6. Resource Person: Invite a local lawyer to explain the legal steps in forming:

   a. a partnership
   b. a corporation

   and the financial responsibilities each entails.

7. Teacher reading and discussion. Read and tell story to the class. "How Cortes Randell Drained the Fountain of Youth." by Rush Loving, Jr., Fortune, April 1970, p. 95.

Materials:

1. Books:
   a. Cross, Theodore L. Black Capitalism: Strategy for Business in the Ghetto. Atheneum Press, 1969. (Note: This book won the McKinsey Foundation Award as one of the Books of 1969 "that most clearly merit thoughtful study by highly placed managers." Its authors feel that corporations have an obligation to help solve the race problem. Reviewed by Charles E. Silberman in Fortune, August 1970, p. 197.
   b. You and the Investment World. New York Stock Exchange, 11 Wall Street, New York, New York.

2. Film:
   a. "Economics of Democracy," 1959, 16mm. sound, 27 min. (three types of private enterprises). American Film Corporation, 1129-20th Street, N.W., Washington, D.C.

3. Teacher-constructed test.

BUSINESS EDUCATION

Purpose: To develop an understanding of the scope of the term office management.

To broaden students' conception of functions performed by an office manager, supervisor, and executive secretary.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Select appropriate reference books to find different kinds of business information.

2. Role play specific duties performed by an office supervisor and/or executive secretary, office manager, including delegating responsibility, discharging an employee, promoting an employee, and reprimanding an employee for absenteeism.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Brainstorm by typing some personal and/or technical traits and skills they feel might lead to more efficient productivity.

2. Payroll procedures and writing checks. (See Mathematics Activities for tie-in.)

3. Set up simulated office in classroom--select students to act as time clerks, manager, receptionist, etc. and utilize service function to faculty as outlined in secretarial/clerical topic. Note: If appropriate, do this as part of the student-organized company.

4. Design a simple form to be used in surveying the morale of classmates involved in the Mini-school, carry out survey, analyze results. Tie-in with Social Studies.

5. Quests: Individual or team demonstrations in the areas of:

Activities -- Continued

a. Scheduling appointments
b. Executive secretarial responsibilities for arranging meetings and conferences.
c. Making reservations and itineraries for employer, etc.--secretarial jobs that stress initiative--introduction and use of specific business reference books.
d. Role-playing duties as specified in Objective 1.

Materials:

1. Books:
   a. Pendery, John A. Clerical Payroll Procedures. New Rochelle, New York: South-Western Publishing Company, 1962.
   b. Tonne, Herbert, et al. Business Principles, Organization and Management. New York, New York: Gregg Division, McGraw-Hill Book Company, 1963. Chapter 21 "Management of the Office," pp. 337-349.
2. Pamphlets:
   a. "Invitation to Achievement: Your Career in Management" (70.2). American Management Association, Management Information Service, 135 West 50th Street, New York 10020.
   b. "Supervision for Secretaries, Secretarial Skill Series." Instructional Materials, Incorporated, 1966. (A division of Litton Industries, 1965 West Crescent Avenue, Anaheim, California 92801). A programmed instruction paperback.
   c. "What Is an Executive Secretary." The Administrative Management Society, Willow Grove, Pennsylvania 19090.
3. Films:
   a. "The Right Touch" (story of a secretary and her career). MP-so-16mm. 18 min. color. Obtain from IBM.
   b. "You're on the Team" (stresses simplification of good work habits for employees). MP-so-16mm. 15 min., color Available from Eastman Kodak Company.
   c. "Merchant to the Millions" (story of Sears Roebuck) (S-879), 16mm., sound 28 min. Free. Book in advance and pay return postage. Association-Sterling Films, 43 West 61st St., New York, New York 10036.

Notes:

Tie-Ins with Specific Career-Related Skills:

Skills in using initiative, finding information and good human relations are important in such occupations as: executive secretary, office manager, supervisor, personnel director, personnel assistants, training directors.

HOME ECONOMICS

Purpose: To broaden the students' conceptions of administration, management and labor in the field of home economics with particular attention to the family as a miniature organization involving all three.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Define the terms administration, management and labor and illustrate their meanings by reference to both a hypothetical firm and to the family as an organization.

2. Explain the meaning of the statement: "The functions of management do not change, only its goals and resources are altered."

3. Explain the meaning of the statement that the fundamental purpose of management is to operate and bring about change in an establishment in an orderly way.

4. Describe administrative, management, and labor functions associated with the operation of the school cafeteria.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Participate in a group discussion under the teacher's direction on the meanings of the terms administration, management and labor.

2. Working in small groups, compile a list of the functions of a manager, the qualities needed to be a good manager, and examples of better and poorer management.

3. Given descriptions of administrative, management and labor problems (these might be student developed), propose one or more solutions and defend these before other students.

4. Prepare an oral/written report to describe administrative, management and labor functions in the student's home.

Activities -- Continued

5. Collaborate in a group project to prepare a written report to describe administrative, management and labor functions associated with the operation of the school cafeteria. Include an organization chart. Tie-in with Business Language Arts.

6. Working in small groups, design hypothetical situations and problems for role-playing followed by actual role play.

   a. Head of a household.
   b. Manager of a supermarket.
   c. Owner of a restaurant.
   d. Waiter/waitress in an eating establishment.

   The actual role-playing could usefully incorporate or review Activity 6, Language Arts.

7. Group Quest: Divide the class into two teams to prepare demonstrations of window displays for a particular holiday. Example: Decorating a store window for Christmas. One team will make the display, the other will supervise. Tie-in with Art, Industrial Arts, Business Education.

8. High impact activity. Have the class set up a catering service:

   a. One student as director will determine the personnel required, the budget, the form of advertisement, solicitation of clients, etc.
   b. The supervisor or manager will determine the menu, the per person cost, necessary decorations and procedures according to rules of etiquette, seating arrangements, and supervision of waiters and waitresses.
   c. The waiters and waitresses will be responsible for the actual service of foods, drinks, etc. and most of the other miscellaneous needs of the guests. Tie-in with Business Education.

9. Resource people. Invite cafeteria personnel at the various levels to discuss their duties. Coordinate with Activity 5.

Materials:

1. Books:
   a. Gross and Crandall. Management for Modern Families. Appleton-Century Crofts, 1963.
   b. Lewis, Ralph F. Management Uses of Accounting. New York, New York: Harper and Brothers, 1961.
2. Pamphlets:
   a. Invitation to Achievement. Your Career in Management. American Management Association, Management Information Service, The American Management Association Building, 135 W. 50th Street, New York, New York 10020.
   b. The Apparel Industry Offers You a Career Opportunity. American Apparel Manufacturers Association, Inc. 2000 K Street, NW Washington, D.C. 20006.
3. Fabric for window display
4. Small boxes, Christmas wrapping paper, ribbon
5. Scissors, paste, tape
6. Empty cans and packages for the supermarket.
7. Cleaning paraphernalia: brooms, cloths, etc.
8. Poster board, crayons, etc.
9. Films: (Free. All require advance booking with alternate rates, and payment of return postage.)
   a. "Fine Art of Sterling Design," (2382) and "Focus on Fine China," (3271), 16mm, sound, 27 and 28 min., respectively. Modern Talking Picture Service, 1212 Avenue of the Americas, New York, New York 10036
   b. "Holiday Happenings," (1968) 16mm. sound 13 min. Reynolds Metals Company, Motion Picture Services, P.O.Box 27003, Richmond, Virginia 23261
   c. "This Way Up" and "The Last Word," (1375) 16mm, sound, 20 and 17 min. respectively. Association-Sterling Films, 43 West 61st Street, New York, New York 10023
   d. "Secrets for a Happy Hostess," (1969) 16mm., sound, 12 min. The Maytag Company, Home Service, Newton, Iowa 50208

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Manufacturing, Marketing and Distribution, Business and Office Occupations
Administration, Management and Labor

INDUSTRIAL ARTS

Purpose: To develop an understanding of the opportunities and requirements of administration, management and labor in the manufacturing industries as they relate to career development.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List some of the management and/or personnel services provided by industry.
2. Organize a student company.
3. Establish wage and salary levels for the administrative, managerial and labor jobs.
4. State the relationship between labor and management with reference to collective bargaining and employee discipline.
5. Role-play a good company administrator.
6. Compare and contrast the qualifications in administrative, managerial and labor jobs relative to qualification in education, experience and salary levels.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. The student will research and present a report on services often referred to as "fringe benefits" which would include: hospitalization insurance; recreational facilities; on-the-job training; life insurance, profit sharing and unemployment compensation, etc.
2. Develop a safety and health program.
3. Plan an itinerary for the company recreation association for a chartered airline tour to California using the less expensive group rates.

Activities:--Continued

4. Investigate and report on an accident report of an employee injured on the job.

5. Set up a list of criteria for an incentive awards program.

6. Conduct a safety slogan contest.

7. Compose a code of ethics for employees in the student company.

8. Select classmates to participate on a management and on a labor team to negotiate a collective bargaining agreement (contract). Include such things as:
   a. grievance procedure
   b. criteria for employee evaluation, performance standards
   c. seniority
   d. bonuses, profit sharing, etc.
   e. promotion procedures, transfers, etc.
   f. dues, closed shop
   g. duty hours
   h. retirement
   i. leave and vacations
   j. wage and salary proposals
   k. credit union

9. Publish a company newsletter.

10. Resource Person: Have school nurse talk to Minischool on safety practices and school insurance. Follow by a student discussion of possible improvements.

11. Write job descriptions for positions in the class company.

12. Establish recruitment procedures for class company.

13. Make an organization chart for your company.

14. Compose newspaper ads for the vacancies in your company.

Activities -- Continued

15. Field Trip: Visit the D.C. School System's Professional and Support Personnel Offices. Have students record types of occupations observed.

Materials:

1. Books:
   a. Industrial Arts for the Middle Grades: Manufacturing. Industrial Arts Education, Vocation Education Division, Office of Instructional Services, Georgia Department of Education, Atlanta, Georgia 30334.
2. Films:
   a. "Merchant to Millions" (S-879) 16mm, sound 28 min. (Development of Sears, Roebuck and Company). Ten weeks advance booking. Association-Sterling Films, 600 Grand Avenue, Ridgefield, N.J. 07657.
3. Projector
4. Screen
5. Poster board for charts
6. Crayons, watercolors, etc.

Notes:

Certain of the activities assume that the Minischool is carrying out, as a continuing high impact activity, a student-organized company. See the introductory pages for this cluster.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 5 - Secretarial and Clerical Services

Topic: Secretarial and Clerical Services

Purpose: To develop vocational understanding and competence in secretarial and clerical services.

To explore the different types of Secretarial and Clerical Services.

a. stenographers
b. court reporters
c. secretaries
d. typists
e. bookkeepers
f. receptionists
g. file clerks
h. receiving and shipping clerks
i. cashiers
j. tellers
k. transcribers
l. payroll clerks
m. many others

Main Ideas:

1. Secretarial and clerical services are important in everyday activities.
2. Pleasant manners and efficient organization are main requirements.
3. The secretarial and clerical services are one of the major sources of employment.
4. The secretarial and clerical services are not limited to females.
5. There are different types of secretarial and clerical services.

Quests:

1. Locate and interview a neighbor who is a clerical or secretarial worker.
2. Prepare a bulletin board depicting different types of secretarial and clerical workers.
3. Students volunteer secretarial and clerical assistance to Minischool faculty members.
4. Role-play the characteristics of a good secretarial or clerical worker.

Career Opportunities:

1. Unskilled

collator
general officer clerk

Career Opportunities -- Continued

mail clerk
messenger
quality control clerk

2. Semi-skilled

accounting clerk
bank teller
cashier
duplicating machine operator
filing clerk
general office worker
mail carrier
office machine operator
payroll clerk
postal clerk
receptionist
reservation control agent
shipping and receiving clerk
station agent
switchboard operator
ticket agent
timekeeper
typewriter repairman

3. Skilled

billing machine operator
bookkeeper
clerk typist
court reporter
dictating equipment transcriber
executive secretary
insurance claim adjuster
interviewer
PBX operator
personnel assistant
sales correspondent
secretary
social secretary
stenographer
technical stenographer
telephone operator
test technician

Career Opportunities -- Continued

4. Professional

accountant
auditor
budget officer
credit manager
executive secretary
financial analyst
office manager
personnel director
teacher, business education
training director

LANGUAGE ARTS

Purpose:

To explore the roles of secretaries and clerks.

To realize that the many tasks of secretaries and clerks require effective use of English.

To improve personal language-based skills.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Use a formal, legible cursive writing on all written assignments.
2. List 10 jobs in secretarial/clerical services.
3. Describe the tasks of secretaries and clerks, particularly those tasks that require language arts skills.
4. Role play the courteous behavior required in office personnel.
5. Speak briskly, efficiently, in response to factual questions.
6. Read at a steady rate of 250 words per minute for five minutes on new, unfamiliar material. (Brochures accompanying office equipment as well as advertising folders for office machines make excellent practice materials.)

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. View films not seen in Topic 4 of this cluster:

   a. "The Clerk" (U. of Iowa)
   b. "Office Courtesy" (11 min., Encyclopedia Brit. Films)
   c. "Writing through the Ages" (U. of Iowa)
   d. "Office Etiquette" (17 min., EBF)
   e. "Office Teamwork" (11 min., EBF)

   Have class discussion or written reports.

2. Working in small groups, write and dramatize scenes from a typical secretary's day. Emphasize social skills. Tie-in with Business Education.

Activities -- Continued

3. High Impact. Use the C&P Telephone Company's Teletrainer to practice efficient responses to telephone inquiries. Students can create the situations; individuals practice receiving immediate feedback on the quality of their responses.

4. Take dictation in longhand, using a careful cursive style. Submit work to teacher for evaluation by Zoner-Bloser ruler. This can be done efficiently if the class is divided into partners. Dictators select one of several messages prestructured by the teacher and notes on the chalkboard or on ditto sheets.

5. Take a reading test on unfamiliar material; determine rate per minute and record on a class progress chart. Tie-in with Mathematics.

6. In good cursive script, write a personal essay on "Why I Think Handwriting Has Been Important Down through the Ages." Submit for evaluation and credit.

7. Individual Quests:

   a. Report to the class on the duties, benefits of clerical/secretarial work after interviewing a friend or relative who does office work.
   b. With a tape recorder, interview someone who hires secretarial/clerical help. Ask what qualities are absolutely necessary for these jobs. Play the interview tape for the class.
   c. Visit the office of someone you know well. Shoot 50 feet of 8mm film, showing a real-life situation. Share with class, furnishing oral commentary.

Materials:

1. Films (See Activity 1)
2. C&P Telephone Teletrainer
3. Zoner-Bloser ruler for teacher to evaluate cursive writing.
4. Reading materials for rate tests: use equipment manuals and advertising brochures for office machines.

Materials -- Continued

5. Tape cartridge and tape recorder for individual activities.
6. Camera (movie) and 8mm file for on-site film of office workers.
7. Large wall chart to record reading progress.

Notes:

Tie-ins with Specific Career-Related Skills

Simple office procedures will be learned, telephone skills will be improved, graphemic's notation (writing and punctuation) will be improved.

MATHEMATICS

Purpose: With such extensive use of electronic calculators and computers, people tend to overlook the need to perform mental arithmetic. However, there are numerous occasions that call for one to perform checks on calculations made in the grocery store, department store, post office, etc. that are generally neglected. It is intended that the student will be able to appreciate the value of not losing money through carelessness.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Calculate mentally and obtain approximate answers.
2. Add whole numbers with four addends up to three digits.
3. Read and write decimal numerals to ten-thousandths.
4. Use appropriate methods of checking results of computation.
5. Convert percents to common and decimal fractions.
6. Multiply decimal fractions.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. The teacher is to prepare a group of additional problems similar to what a sales person or cashier would have to calculate in a day's work. The students are to find the approximate sum mentally (without the aid of paper and pencil.) The teacher is to keep an accurate record of each problem with its proper answer for checking purposes. Note: The teacher is to show the students some of the techniques for performing mental calculations such as looking for combinations that make tens, hundredths, etc. The students are to calculate approximate sales tax mentally for various sales slip totals.

Activities -- Continued

2. The teacher is to prepare sales tickets such as those used in a dime store and have the students calculate the sums with pencil. The students are to be timed by the teacher. Each additional problem is to be considered as having served one customer. The teacher is to choose a dollar amount of sales as the basis for paying commissions to the salesman. On the basis of each student's performance, the teacher is to identify those students who received salesmen's commissions
Tie-in with Business Education.

3. The teacher and/or students are to choose some items of goods and find out how they are shipped; e.g., 12 cans per crate. The students are to find out the weight of a single item of goods and to calculate the weight of the shipping crate. The students are also to calculate the shipping cost for each means of shipping the goods. The students are to find the shipping cost per pound and the shipping cost per ounce. Tie-in with Business Education.

4. The teacher is to find the cost of an electronic calculator(s). The students are to calculate the cost of enough desk calculators for the entire class. The business teacher is to show the students how to write a check(s) for the cost of the calculators and fill out requisition orders. Tie-in with Business Education.

5. The teacher is to make up some bills involving installment purchases. The students are to calculate the finance charge, amount of charges, amount past due, and the new balance. The business teacher is to show the students how to prepare the financial statement as a department store prepares it. Similar types of activities may be performed for house notes, 1st and 2nd trust notes, etc.

Materials:

1. Information on cost of shipping goods by each means available.
2. Information on cost of goods.

Materials -- Continued

3. Preparation of orders for the calculations to be performed on.
4. Blank sales slips.
5. Blank checks.

SCIENCE

Purpose: To acquaint students with the principles and operation of simple machines which are the building blocks of office machines.

Objectives: Upon completion of work in this unit the student should be able to:

1. Diagram, describe, and use simple machines of the lever, inclined plane, screw and wheel and axle types.

2. Identify types of simple machines in household devices and in office machines like the typewriter and point out their basic components.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Observe a standard typewriter (non-electric) with the dust cover removed to note how depressing a key causes one(lever) rod to move another and the letter-face of the key to approach the platen. Depressing keys x, d, e, and 4 gently and simultaneously gives a good view of the lever action underneath.
Move the carriage return slowly to notice the lever action in releasing the carriage lock. How many other levers can you find on the typewriter? Work each gently to observe its action in slow motion. Have pupils list these by their technical names. See typing teacher for proper nomenclature of the typewriter or make use of a manual. Tie-in with Business Education.

2. Pupils experiment with the level as a simple machine using meter sticks, fulcrums, and varying weights. (Steel washers and twist 'ems are a good substitute for laboratory weights with hooks on them.) Keeping the distance and weight constant on one side of the fulcrum (e.g., 10 cm. and 10 washers), have pupils experiment on the other side of the fulcrum with 8 washers moved out to its proper distance. See if pupils can discover the relationship: $W_l \times D_l = W_r \times D_r$ when a balance is maintained. Tie-in with Mathematics.

3. Have a small student raise a large student by means of a 2' x 6' plank 8 to 12 feet long with the fulcrum properly placed.
Borrow the custodian's wheelbarrow to demonstrate levers of the second class.
Study slow motion films of the baseball pitcher's throw to see levers of the 3rd class. See drawings of the attachment of the biceps and triceps muscle to the radius and ulna bones of the forearm. (Perhaps an advanced H.S. student in biology could demonstrate these.)
Borrow a skeleton from high school biology class to demonstrate bones: levers of the body. Tie-in with Physical Education, Mathematics.

4. Inclined plane.
   a. Have a team of pupils use the school stairs between first and second floor as an inclined plane. Measure the vertical distance between 1st and 2nd floors. Use a watch with a second hand or stop watch to record the time(s) it takes a pupil(s) to run up the stairs (three trials). Find the average time.
   b. Have a team of pupils go to the gym and measure the average time it takes this same pupil(s) to climb the gym rope to the same height as that between the floors (with or without the help of his/her feet).
   c. Have a team of pupils calculate the work done (force x distance) using the pupil's weight as the force in the stair runs and the rope climbs. Now calculate the power expended as work per unit time by dividing by the average time it took for the three trials: stairs vs. rope. How does the inclined plane save power output?

   Tie-in with Mathematics.

5. Use the plane board, cart, weights, and pulley to make varying angles of the inclined plane and measure the force necessary to raise a load up the plane. Compare vertical rise to horizontal distance traveled. Tie-in with Mathematics.

6. Quest: Physiology. In the inclined plane trials on the steps and the gym, measure the changes in the rate of the pupil's heartbeat as taken by

Activities -- Continued.

the pulse for one minute before the trials and again after the three trials. What does this tell us about the body's response to work (force x distance)? What mechanisms are at work in the body to cause the heart to speed up?) Tie-in with Mathematics.

7. The Screw. Have pupils draw an inclined plane making a diagonal line beginning at the bottom left corner of their papers. Use a pen or crayon. Cut along this line to make a long triangle. Starting with the height side of the triangle, wrap it around a pencil keeping the base side of the triangle at right angles to the long axis of the pencil and covering itself. Observe how the diagonal line takes the configuration of a screw. Measure the vertical rise. Measure the horizontal distance. Tie-in with Mathematics.

8. Wrap a thin string around the threads of a long wood screw or bolt to measure its diagonal side. Measure the height of the screw or bolt threads from start to end. Calculate the mechanical advantage of the screw or bolt. Tie-in with Mathematics.

9. Wheel & Axle: Door knob, steering wheel--Have a pupil try to open a room closet door when the door knob is removed and only the shaft protrudes. Repeat using the knob in place.
In addition:
   a. Pupils use the wheel & axle apparatus with weights of various sizes. What is the ratio of $Diameter_1$ to $Diameter_2$ compared to $weight_1$ and $weight_2$ to operate it?

   b. Home assignment: How many turns of the automobile steering wheel are necessary for five inches of turn of the front wheel? What is the diameter of the steering wheel? Answers will vary. Give the pupils some hints on methods of measuring the front wheel traverse to produce somewhat standardized results.

Activities -- Continued

10. Quest: How does power steering work to make steering easier? Measure how much speed is gained by applying force to an axle by measuring the relative distance the wheel moves compared to the axle. Turn this ratio around to measure force gained by applying the force to the wheel and measuring the rotation of the axle.

11. Group Quest: Arrange for a service representative to bring in a typewriter and demonstrate the routine servicing of it.

Materials:

1. Books:
   a. Adler, Irving. Tools in Your Life, New York: The John Day Company, 1956.
   b. Buehr, Walter. The First Book of Machines, New York: Franklin Watts, Incorporated, 1962.
   c. deCamp, L. Sprague. Man and Power, New York: Golden Press, n.c.
   d. Syrocki, B. John. What Is A Machine? Chicago: Banefic Press. 1960.
   e. Calder, Ritchie. The Evolution of the Machine, New York: Van Nostrand Company, Incorporated, 1968.
   f. Schneider, Herman. Everyday Machines and How They Work, New York: Whittlesey House, McGraw-Hill Book Company, 1950.
   g. Sharp, Elizabeth N. Simple Machines and How They Work, New York: Random House, 1959.
2. Films (D.C. Public Schools)
   a. #1522 "Making Things Move"
   b. #759 "How Machines and Tools Help Us"
   c. #1365 "Let's Look at Levers"
   d. #1523 "Making Work Easier"
   e. #882 "We Use Power"
3. 10 meter sticks or equivalent dowel rods
4. 10 fulcrums
5. Weights with hooks or uniform metal washers with wire twist'ems
6. 10 rulers if not using meter sticks
7. 2' x 6' or 2' x 8' plank eight to 10 feet long
8. 25 ft. cloth tape on reel
9. Stop watch or watch with second hand
10. Spool of coarse white thread

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Secretarial and Clerical Services: The Federal Government

SOCIAL STUDIES

Purpose: To have students learn about the role of the Federal Government as an employer of secretarial and clerical workers in the Washington Metropolitan Area.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State briefly why the Civil Service Commission was begun.
2. Describe briefly how the Civil Service Commission functions, including the ratings and use of competitive examinations.
3. List secretarial and clerical job opportunities offered by the Federal Government as an employer and describe one such opportunity in detail.
4. State some of the advantages of the merit system of hiring employees over the former spoils system.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Survey the Minischool to determine the types of jobs in government held by members of their families.
2. Prepare displays of graphs and tables reporting the results from 1. Tie-in with Mathematics, Graphic Arts.
3. Individual Quest: Interview persons who hold government positions of secretarial and clerical nature and prepare oral/written reports of these.
4. Compile information about the requirements for obtaining secretarial and clerical positions, including specific Civil Service Commission announcements.
5. Survey the Minischool to determine the extent to which each student (or a sampling of students) possesses specific requirements from 4. Tie-in with Mathematics.

Activities -- Continued

6. Prepare an annotated map of Washington to show the main office buildings in which substantial numbers of secretarial and clerical workers are located and indicate for each the Federal activity or activities involved.

7. Quest: Research civil servant legislation: The Hatch Act, Pendleton Act, Veteran's Preference, etc. Report findings to class.

8. Plan and conduct a panel discussion: "Should Federal employees be permitted to strike?" If possible, have two resource persons as reactors.

Materials:

1. Books:
   a. Casner, Mabel and Ralph Gabriel. Story of the American Nation, New York: Harcourt, Brace and World, 1967.
   b. Mackey, Margaret. Your Country's Story, New York: Ginn and Company.
   c. Rienow, Robert. America in Today's World, Boston, D.C. Heath and Company.
2. Films:
   a. "Labor of Love" 16 mm. Sound (22 min.) 2 weeks advance notice. U.S. Civil Service Commission
      Customhouse, Second and Chestnut Streets
      Philadelphia, Pennsylvania 19106
3. Map of Washington

Notes:

Tie-Ins with Other Subject Areas

Language Arts -- arrange small group competitions in which team members win points by correctly reading aloud Civil Service Commission announcements and spelling words.

Mathematics -- prepare graphs and tables showing growth of Federal employment since 1900 (number of persons, payroll) and calculate average salary by year or decade; also the trends in employment of minority group members since 1940, including calculations where appropriate.

Business Education -- have students prepare individual progress charts to show their development of specific skill requirements.

BUSINESS EDUCATION

Purpose:

To acquaint students with various types of routine clerical tasks.

To explore the personal/personality aspect involved in all secretarial/clerical services.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Type from rough-draft copy.
2. Explain the importance of the personal-social role and "selling yourself" in securing and maintaining secretarial and clerical positions.
3. File data according to basic filing rules, including numerical.
4. Name and identify various ways of recording data for transcription.
5. Identify various characteristics and requirements of different kinds of clerical undertakings.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Clerical typing, proofreading in teams, chain feeding envelopes, correct erasing, following directions and proofreading individually.
2. Group Quest: Design office practice service form to be used in conjunction with offering clerical assistance to faculty members.
3. Group Quest: Panel Discussions -- "Making the Most of Yourself"--dressing correctly, being well-groomed, manners, your feelings, talking with people, poise, versatility, ability to follow through.
4. Group Quest: Bring samples of business letters and check them for overall appearance and accuracy.

Activities -- Continued

5. Teacher demonstration of using shorthand in taking notes; brief introduction of shorthand code and symbols.

6. Students type from teacher dictation.

7. Resource Person: A demonstration of dictating equipment, allowing students brief practice periods.

8. Individual Quest: Roleplay how to handle office callers.

9. Lecture. Basic filing systems; simple rules for filing: students file index cards from data processing topic; set up a card tickler file.

10. Individual/Group Quest: Report to class the starting salaries and minimum requirements of various secretarial and clerical occupations (want-ads), or research how salaries have changed in the past 20 years.

11. Type outline or format of a personal data sheet. Be sure to include references.

12. Type straight copy material using requirements of Civil Service Commission.

Materials:

1. Books:
   a. Andrews, Margaret. Opportunity Knocks Series. New York: Gregg Division, McGraw-Hill Book Company, 1968. ("You Said It," "About Him," "About Her")
   b. Dame, Patrick and Grubbs. Exploratory Business. fifth edition, New York, New York: Gregg Division, McGraw-Hill Book Company, 1971. (See section on shorthand.)
   c. Gregg, John, et. al. Applied Secretary Practice. New York, New York: Gregg Division, McGraw-Hill Book Company, 1968.
   d. Morrison, Phyliss. A Career in the Modern Office. New York, New York: Gregg Division, McGraw-Hill Book Company, 1969. (A series of four paperback books.)

Materials -- Continued

e. White, Jane F. and Thadys Dewar. Successful Devices in Teaching Clerical Practice. Portland, Maine: J. Weston Walsh, Box 1075.

2. Pamphlets:
   a. Employment Opportunity Aid for Clerical Work (370.7). U.S. Department of Labor, John Fitzgerald Kennedy Federal Building, Government Center, Boston, Massachusetts 02203.
   b. Ford Motor Company. The American Road, Dearborn, Michigan 48121.
   c. Shorthand Reporting as a Career (285.1). National Shorthand Reporters Association, 25 West Main Street, Madison, Wisconsin 53703.
3. Films and Filmstrips:
   a. "Office Occupations." 7S-SI-35mm, Stanley Bowman Company, Incorporated, 12 Cleveland Street, Valhalla, New York 10595.
   b. "Duties of a Secretary." FS So 35mm, Business Education Division of Underwood Corporation.
   c. "Impressions." 1964. 16mm, sound. Book six weeks in advance; pay return postage. IBM, Office Products Division, 1212 Avenue of the Americas, New York, New York 10036.

Notes:

Tie-Ins with Specific Career-Related Skills:

Skills in clerical typing and filing and notetaking techniques are important in such occupations as: general office worker, file clerk, duplicating machine operator, typist, clerk-typist, stenographer, secretary, executive secretary.

HOME ECONOMICS

Purpose: To have the students learn that home economics has a close and important relationship to secretarial and clerical work.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Describe one or more ways in which secretarial and clerical skills can be important in their everyday lives.
2. Comprehend and use secretarial and clerical work vocabulary.
3. Describe one or more of the kinds of interpersonal relationships that are important in secretarial and clerical work and give examples of better and poorer handling of specific interactions.
4. State the general duties of secretaries and clerical workers.
5. Describe how personal appearance enters into secretarial and clerical work and give examples of better and poorer personal appearance features.
6. Prepare an index card file of personal belongings, cooking recipes, or similar category.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Make a list of the number of different places where they have seen secretaries at work.
2. Arrange to visit the typing laboratory or some offices in the school. Tie-in with Business Education.
3. Have the person in charge show the files and how they are arranged to the students. Look at the different types of machines in the room; notice how many kinds there are; check brand names. Tie-in with Business Education

Activities -- Continued

4. Look through magazines to check makes of machines; compile a list of those used in secretarial and clerical work.

5. Resource Person: School secretary or one from the area or from a Washington D.C. business school to explain the duties of a secretary. What training did she have to have in order to get the position?

6. Prepare an oral/written report to list qualities which they feel that a secretary should have, and examples of better and poorer personal appearance and relationships.

7. Divide the students into groups.
   a. One group check papers and magazines and make a display of styles for secretaries.
   b. Another group practice modeling shoes and dresses.
   c. Another group show hair styles.
   d. Another group check fingernails, makeup, etc.
   e. Another see how many new words they can think of or look up which would be used in an office.

8. Group Quest: Set up an office scene. Make small cabinets from cardboard boxes. Borrow a typewriter. Have some students make drawers and files for the cabinet. Use chairs in the room and teacher's chair. Role play with different students being a secretary in a position listed under careers.

9. Group Quest: Debate on whether men should be secretaries; or panel discussion on why secretaries are usually women and is this a good thing? Tie-in with Social Studies.

10. Prepare an index card file of personal belongings, recipes, or some other category.

Materials:

1. Bulletins:
   a. You as a Secretary. Hartford, Connecticut: Royal Office Typewriters, Division of Litton Industries, 150 New Pork Avenue.
   b. The Successful Secretary. Hartford, Connecticut: Royal Office Typewriters, Division of Litton Industries, 150 New Pork Avenue.

Materials -- Continued

c. Selecting Fashions. Sears Public Relations, Chicago, Illinois.

2. Index cards for Activity 10.
3. Magazines (for fashion display)

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Secretarial and Clerical Services

INDUSTRIAL ARTS

Purpose:

To make the students aware of the many facets of secretarial and clerical positions and their importance to the efficient operation of business establishments.

To point out the availability of secretarial and clerical careers in the United States Government and private enterprises of the metropolitan Washington, D.C. area.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Perform some of the functions required of secretaries and clerks.
2. List some ways in which a secretary may exert positive and negative influences on a business by her personality.
3. List from 5 to 10 points usually covered in a management/labor contract.
4. Read and interpret clippings of stock exchange reports.
5. Print some of the various business forms required in day-to-day correspondence.
6. Indicate situations which require "form letter" replies and those which require more formal replies.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Individual Quest: Conduct interview to obtain a job analysis of the school secretary; compare her duties to those of the administrative aide of your school (this job analysis could be carried out by a different individual.)
2. Resource Person: Invite the school secretary or administrative aide to speak to the class on responsibilities and qualifications.

Activities -- Continued

3. Group Quest: Form a company in your class in which different members of the class role play secretaries and/or clerks in the following positions:
   a. taking dictation from the "boss".
   b. preparing a list of existing or needed supplies.
   c. taking a telephone message informing her "boss" of a board meeting two weeks from the present day.
   d. after being told by her employer that he will be unable to accept an invitation to dine at the home of a colleague, graciously inform the colleague that the invitation cannot be accepted.
   e. filing the day's correspondence in correct order.

4. Individual Quest: Draft a short letter confirming an agreement made by telephone. Print it and display it after it has been proofread by classmates.

5. Make a chart of all of the employees in your "class company" showing their desired vacation schedule. Post it on the bulletin board.

6. Bring in newspaper clippings from the Stock Exchange reports from the local newspapers (Star, News, Post or Wall Street Journal). Your teacher will teach you to read and interpret these clippings. Tie-in with Mathematics.

7. Group Quest: Make a survey of your class to see how many of them wish to have a collective bargaining agent (union). Report on the advantages and disadvantages of belonging to a union.
   a. Divide the class into two negotiating teams: (1) management (or your employer) and (2) secretarial and clerical local No. 2 (or the employees seeking a contract)
   b. Elect officers of your union.
   c. Negotiate a collective bargaining agreement or a contract. Include such things as:
      (1) working hours
      (2) salary schedule
      (3) promotion policy
      (4) vacation policy
      (5) graduated leave policy

Activities -- Continued

(6) legal holidays to be observed
(7) employee representation on company policy-making boards
(8) grievance procedure
(9) retirement policy
(10) competitive training for promotions

8. Woodshop classes. Design and construct a board on which may be indicated all of the names of the teachers in the Career Development Program. Make a sliding device to indicate their attendance, departure, or hour of return to duty.

9. Make a collage of as many different secretarial and clerical ads as you can find in your local newspapers. Tie-in with Art.

10. Compose ads for the local daily papers in which you advertise for an executive secretary, a legal stenographer, a stock clerk, a payroll clerk, and a court reporter. Have the class judge the best ones; then make a display of the winning entries for your graphic arts class. Tie-in with Art, Language Art.

11. Find and report to the class the correct forms of address used in correspondence to the President of the United States, a Senator, a Representative, a Mayor, a Judge, a Governor and an Ambassador. Print and make a collage of these.

12. Compose a formal letter to the Principal of your school regarding some event of importance to take place in your "class company" soon.

13. Write a form letter to the members of one of the English classes in your Minischool asking for suggestions on how to improve your company's secretarial relationships with your customers.

Materials:

1. Local newspapers
2. Wall Street Journal
3. Poster board
4. Wood, nails, etc.

Materials -- Continued

2. Magazine:

   a. Fortune Magazine, "Corporate Care for Kids" and "How Kennecott Got Hooked with Catch-22", September 1971.

3. Books:

   a. Casner, Mabel B. and Gabriel, Ralph N. Story of the American Nation, Chapter 23, New York: Oceana Publications, Inc., 1967.

   b. Cushman, Robert E. The Independent Regulatory Commissions, New York: Oxford University Press, 1941.

   c. Gelormino, Gerald and Gotti, Margaret R. The Challenge of Our Heritage, Dobbs Ferry: Oceana Publications, Inc., 1970.

   d. Hall, J. Oliver and Klinger, Russell E. Problem Solving in Our American Democracy, New York: American Book Company, 1958.

Notes:

Regulatory Agencies: Listed below are some regulatory agencies which are vital to this unit:

Federal Government

1. Atomic Energy Commission - Regulates control and use of nuclear materials.

2. Civil Aeronautics Board - Has economic regulatory powers over civil aviation within the U.S. and between the U.S. and foreign countries.

3. Consumer and Marketing Service, U.S. Department of Agriculture - Exercises continuous supervision over processing of meat, poultry, and egg products. Trained employed by the government in every large slaughter-house and meat-packing company.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 6 - Office Machines

Topic: Office Machines

Purpose: To provide students with a knowledge of the fundamental operations of some office machines.

To explore the occupational opportunities in office machines.

a. calculators
b. billing machines
c. tabulating machines
d. PBX switchboard
e. cash register
f. check writer

To broaden students' concepts of office machines.

Main Ideas:

1. The characteristics of office machine operators.
2. The adding machine can be a necessary source in everyday activities.
3. There is a great demand for office machine operators.
4. The qualifications for office macnine operators are changing.

Quests:

1. Write to one or more manufacturers of office machines asking for literature on their machines.
2. Use the literature received from the above task to prepare a bulletin board.
3. Make a progress poster of some of the office machines.

Career Opportunities:

1. Semi-skilled

addressograph machine operator
billing machine operator
blueprint machine operator
bookkeeping machine operator
calculating machine operator
duplicating machine operator
switchboard operator
tabulating machine operator
retail sales person
salesman, office equipment

2. Skilled

actuarial clerk
audit clerk

Career Opportunities -- Continued

bank cashier
bookkeeper
business forms analyst
clerk stenographer
clerk typist
cost clerk
court stenographer/stenotypist
installment loan worker
office manager
payroll clerk
office machine mechanic
secretary
technical typist

3. Professional

accountant
actuaries
communications system manager
computer programmer
computer system procurement engineer
mathematician
physicist
statistican
systems analyst
teacher, business education

LANGUAGE

Purpose:

To learn the names and uses of some basic office machines.

To find out how many jobs are related to office equipment.

To realize that office machines simply record and manipulate data and ideas which people first identify and organize.

To learn the basic forms of literary record keeping.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Spell the names of basic office machines and basic literary forms used in record keeping.
2. List 10-15 jobs related to office machines.
3. Explain why office machines need intelligent people to use them efficiently.
4. Identify the following forms of literary records: diary, journal, chronicle, autobiography, lyric poem.
5. Use (create) the standard forms of literary recording (see above).

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Visit a middle-sized office in the community and make a list of the office equipment used and jobs associated with equipment.
2. Write a journal entry for the previous day's field trip: repeat names of machines, specify uses, tell why machines need people to operate them.
3. Make individual set of charts (5 in a set) on literary records. List 3 characteristics of each form (journal, diary, chronicle, autobiography, lyric poem).
4. View films to be able to list various jobs related to office machines:

Activities -- Continued

a. "Secretary: Transcribing"
b. "Building Typing Skill"
c. "Accounting: Basic Procedures"

5. View films to extend knowledge needed to write in each of 5 literary forms:

   a. "So You Know How to Make a Statement of Fact?"
   b. "The Exact Small Things"
   c. "Writing Forceful Sentences, I and II"
   d. "Poems are Fun"
   e "Style in Writing"
   f. "The Newspaper Story"

   NOTE: All of the above films are available from the University of Iowa.

6. In a minibook called "Literary Record Keeping" write samples for each of 5 literary forms. Possible tie-in with Art.

Materials:

1. Films (see activities)
2. Poster boards or 5 sheets of manila paper for each student.
3. A pre-structured mini-notebook called Literary Record Keeping.
4. Booklets and folders from local office equipment dealers explaining use of such machines as:
   a. 3M copier
   b. Ditto Spirit Duplicator
   c. Gestetner or Ditto Mimeograph machine
   d. AMC calculator and others
   e. IBM Dictaphone

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Office Machines

MATHEMATICS

Purpose: To provide students with a knowledge of the fundamental mathematical operations with office machines, and their role as an essential tool in business.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Perform the four basic operations with whole numbers, integers, decimal fractions, and fractions on electronic and nand calculators.
2. Compute the square root of a real number on the electronic and hand calculators.
3. Calculate cumulative products on an electronic calculator.
4. Cite examples of careers that depend heavily on office machines or deal directly with production and sales of office machines.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. View demonstration of the four basic operations on the hand operated and electronic calculators by the teacher or a resource person (who should explain how these tools are used in his or her work).
2. Perform the four basic operations both with pencil and paper and with the two types of calculators, and time each other while solving problems these ways.
3. View demonstration by the teacher on computing square roots on the calculators; then practice with the calculators and calculate square roots both with the calculators and with pencil and paper, while timing each other.
4. Compute cumulative products on the electronic calculator after demonstration by the teacher.
5. Calculate the estimated times for completing various numbers of operations by use of the calculators or

Activities -- Continued

by pencil and paper, based on the data from 2 and 3; make graphs and tables to summarize the results. Tie-in with Graphic Arts.

6. Given a list of deposits and withdrawals, compute a bank balance using the calculators. Tie-in with Business Education.

7. Visit the school business office for observation and demonstration of the utilization there of office machines.

8. Compile a list of various types of office machines and their uses; prepare a display of drawings or pictures of machines along with their names and descriptions of the uses. Tie-in with Art.

9. Resource person, Personnel Director of a federal agency: Discussion of various jobs that use office machines and how their use increases efficiency.

10. Resource person, representative from IBM or another office products firm: Discussion of career opportunities within the office machine industry.

11. Quest:
    a. Prepare a display showing a drawing or photograph of a calculator with various parts indicated by lettered arrows and the purpose of each part explained. Tie-in with Art.
    b. Team competition. Given an actual calculator or a drawing/photograph of one, have teams compete for points by naming parts and stating their functions.

Materials:

1. All purpose desk top calculator/computer available at:

   Monroe Division of Litton Industries
   Mr. John Gertsen
   2212 Wisconsin Avenue
   Washington, D.C.
   Fe7-5100

2. Pictures of office machines.

Career Development Curriculum Guide: Grade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Office Machines

BUSINESS EDUCATION

Purpose:

To acquaint students with the fundamental operations of some calculating, duplicating, and voice-dictation machines.

To explore the office machines field in conjunction with the role of a clerical worker.

To give students an opportunity to practice and review basic clerical skills in conjunction with broadening their awareness of office machines.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Perform simple addition-subtraction problem using a ten-key or full-key adding machine and/or a key-driven or rotary calculator.

2. Type a master and/or stencil, and operate, with some teacher guidance, a spirit duplicator and/or mimeograph machine so as to run off a minimum number of copies from above prepared masters.

3. Identify and/or list various types of office machines commonly used by clerical employees and state characteristics unique to each.

4. Perform subtraction by addition in conjunction with the cash register and/or simulated exercises.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Bring office equipment catalogues to class. Cut out pictures of rotary files, check-writing machines, etc. Mount on 5 x 8 cards. Type name of equipment on the back of each card for easy checking. Have contest between two groups. Each side keeps the cards they identify. (Optional spelling aspect)

2. Using a rotation plan with available office machines, find answers for such problems as: proving totals in departmental sales distribution, ascertaining the amount of the increase or decrease in certain items such as sales, rent, salaries, etc.

Activities -- Continued

3. Role play customers and clerk in problems where the amount of the sale and the amount of the money received is known.

4. Type form letter to manufacturers of office machines asking for literature on their machines. Use error-free copy of letter to cut a stencil. Tie-in with Language Arts.

5. Prepare stencil of a form letter and run off number of copies on mimeograph machine. Insert appropriate inside addresses on copies and send.

6. Prepare a planning guide appointment page for use in scheduling employer's appointments. Include space for who, what, when and where. Type an error-free copy.

7. Type a ditto master on the appointment page and run off a set number of copies on spirit duplicator. Keep copies for use in Administrative-Management topic.

8. Write or call Business Equipment Manufacturers, 1828 L Street, N.W. Washington, D.C. 20036 (466-2288). Secure information on careers.

9. Using the yellow pages of the telephone directory, locate and record names and addresses and phone numbers of various manufacturers and dealers of adding, calculating and dictating equipment. Set up a directory of names and addresses.

10. Visit office in the community to find out what office machines are currently being used; prepare a written report.

11. Quest. Explore the use of touch shorthand and the stenograph shorthand machine; prepare an oral/written report. Tie-in with Language Arts.

12. Resource persons: Contact representatives listed in directory (Activity 9) from various office machines manufacturers--arrange demonstrations of their equipment and/or hands-on experience for students.

Materials:

1. Books:

   a. Agnew, Meehan and Loso. Clerical Office Practice. New Rochelle, New York: South-Western Publishing Company, 1955. (Unit 12--Adding and Calculating Machines).

   b. Gregg, Fries, Rowe and Travis. Applied Secretarial Practice. New York: Gregg Division of McGraw-Hill Book Company, 1968. (Units 14 & 15--Preparing Multiple Copies and Office Machines and Automated equipment).

2. Filmstrips:

   a. "The Mimeograph," FS-SO-35mm 24 min. Request from nearest AB Dick Company distributor.

   b. "The Stencil" FS-S1-35mm 22 min. (See above)

3. Magazine:

   a. Phillips, Irving. "Business Machines and Computer Manufacturing," Occupational Outlook Quarterly (Summer, 1971), pp. 14-19.

4. Pamphlets:

   a. Information on the latest discoveries in the office machine and office appliance field may be obtained from Remington Rand, Incorporated, 315 South Avenue, New York, New York.
   b. From Stenograph, 7300 Niles Center Road, Skokie, Ill. 60076.

5. office equipment catalogs
6. office machines, stencils

INDUSTRIAL ARTS

Purpose: To introduce the student to the beginning course in office machines and to acquaint him with the many job opportunities in this field.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Build a simple wood model of the ten-key adding-listing machine.
2. Operate an actual ten-key adding-listing machine by "touch addition."
3. Find sums using the sub-totals, non-add & repeat keys.
4. Use Industrial Arts tools and equipment as well as make proper use of Ten-Key Add-List Machine.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Visit the school's business department or school office and Sales Department of Sears, Roebuck and check-out the size and function of the ten-key add-list machine. (Make use of sales catalogs, etc.)
2. Determine the cost of materials needed and the measurements necessary to build a model.
3. Lay out and design the model.
4. Build the model(s) and practice learning the machine on it (them).
5. Borrow a ten-key add-list machine from the Business Department or school office and set up a two-column bookkeeping system to be used in the operation of the student company. Tie-in with Business Education.
6. Prepare lists of the various office machines.
7. Have students write their preference of an occupation related to office machines they might be interested in and make an oral/written report. Tie-in with Language Arts.

Activities -- Continued

8. Quest. Make an illustrated report on "The Ten-Key Adding-Listing Machine."

9. Role-play office machine salesman/repairman.

10. Participate in a group discussion of the Full-Keyboard adding-listing machine.

Materials:

1. wood
2. diagrams, charts
3. ten-key add-list machine

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in knowing how to use the ten-key add-list machine is important to the small businessman, school secretary, general office worker, bookkeeper, pharmacist, grocery clerk and department store clerk.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION, BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 7 - Types of Equipment Used in Manufacturing, Marketing and Distribution, Business and Office Occupations

Topic: Types of Equipment Used in Manufacturing, Marketing and Distribution, Business and Office Occupations

Purpose: To show the evolution of machinery and how advanced technology affects the life of man.

To show how new processes for materials, difficult to machine by conventional methods, are giving rise to more modern and sophisticated tools and equipment (Laser Beams).

To show how automation has made manufacturing safer.

Main Ideas: To show how multi-machinery is used in mass production (Assembly line).

Individual and Small Quests:

1. Compile scrapbook on the evolution of machinery.
2. Build a simple machine (Scale for measuring in Science; Generator - Electric Shop).

Career Opportunities:

1. Unskilled

   assembler
   laborer
   materials handler
   melter

2. Semi-skilled

   business machine operator
   business machine serviceman
   driller
   foreman
   inspector
   machine tool operator
   millwrights
   office equipment salesman

Career Opportunities -- Continued

sander
specifications clerk
trimmer
truck driver

3. Skilled

draftsman
electrician
electronic technician
machinery repairman
marketing research personnel
mechanic
parts manager
research and development worker
service manager
tool and die maker

4. Professional

computer programmer
economist
engineering psychologist
market analyst
mathematician
mechanical engineer
metallurgical engineer
statistician
systems analyst
vocational education instructor

LANGUAGE ARTS

Purpose:

To get an overview of technological development from the 17th century until today.

To realize that mass production depends on automation.

To see how many jobs are related to making and using industrial equipment.

To recognize the printing press as the greatest tool invented for the marketing and distribution of ideas.

To be able to identify many verbal art products (books, magazines, newspapers, tracts, digests, pamphlets, folders, flyers), made by automated processes.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. Give a chronological sequence of technological developments of the last three centuries.
2. Be able to explain why mass production is impossible without automation.
3. Discuss various job opportunities related to the production and use of industrial and business equipment.
4. Describe the importance of the printing press as an influence tool in marketing and distributing ideas.
5. Identify the following verbal art products: book, magazine, newspaper, tract, digest, pamphlet, abstract, folder, flyer.
6. Explain why literary forms, especially poetry, are vehicles for marketing and distributing ideas. Use limerick, quatrain, simple lyric, ballad, cinquain.
7. Creatively use poetic forms to disseminate his own ideas.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Build a time line with pictures on a large wall,

Activities - Continued

showing the high points of development of technology (1600-1971). Combine with Activity 6. Tie-in with Art, Social Studies.

2. Write an abstract on the role of the printing press in marketing and distributing ideas: Pin to time line. Combine with Activity 7. Tie-in with Industrial Arts, Social Studies.

3. After visiting Coca Cola Plant and Technology Museum, make a six-foot wall chart listing job titles related to technology. Tie-in with Art. Illustrate chart if feasible.

4. Study samples of verbal art product in the area of poetry: limerick, quatrain, simple lyric, ballad, cinquain.

5. Create own poems (see above) for inclusion in a class "Literary Highlights": reproduce multiple copies by ditto or in print shop.

6. See films to collect data for time line:
   a. "Man on the Assembly Line"
   b. "Automation"
   c. "Industrial Revolution"
   d. "Inventions in America's Growth (1750-1850) I"
   e. "Inventions in America's Growth (1850-1910) II"

Note: All of the above films are from the University of Iowa.

Materials:

1. Films (see activities above).
2. Several rolls of white shelf paper and magic markers for time line.
3. Old magazines to help illustrate time line.
4. Tagboard for six-foot wall chart on job titles.
5. Ditto samples or textbook material on limerick, quatrain, simple lyric,ballad, cinquain.
6. Master sheets and ditto paper for the "mass production" of "Literary Highlights."

Notes:

Tie-Ins with Specific Career Related Skills

Notes -- Continued

Job identification, general verbal skills improvement, manipulation skills development

MATHEMATICS

Purpose: To show the evolution of machinery relative to mathematics under the theme of "From Abacus to Computers." It is also to be noted that this evolutionary process was motivated from the social need of solving problems faster than ever before.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Perform the four basic operations on the abacus.
2. Write time-sharing programs in the BASIC computer language.
3. Perform the four basic operations on any type of calculator commonly found in offices.
4. Calculate simple interest, averages, areas, and conversions from systems of measurement.

Activities: To accomplish the objectives the student may engage in activities such as:

1. The students are to make their own abacus in the wood shop. The teacher is to make up problems involving the four basic operations for the purpose of having the students calculate the answers on the abacus. The teacher and/or students are to keep a record of the amount of time that it takes to make the calculations. Tie-in with Industrial Arts.
2. Activity (1) is to be repeated on the hand-operated and electronic calculators and to compare times.
3. The teacher is to familiarize himself with the Time-Sharing Computer Language called BASIC. The teacher is then to explain this computer language to the students. The teacher and/or students will then prepare formulas from the types of problems that the students should be familiar with: such as simple interest, installment payments, averages, percents, areas of geometric figures, conversions from one system of measurement to another, etc. The students are to write these equations (formulas) in BASIC language.

Activities - Continued

4. The teacher is to give the students specific problems to be solved using the formulas developed in Activity 3. The teacher and students are then to write the short programs and run them on a Time-Sharing Computer. All of the problems run on the Computer are also to be done using the abacus, hand-operated calculator and the electronic calculator with the teacher and students carefully noting how much time it takes using each device, and also with pen and pencil.

Materials:

1. Abacus
2. Hand-operated calculator
3. Electronic Calculator
4. Time-Sharing Computer

Monroe Calculator Company
Washington, D.C.
c/o John Gersten

Notes:

The mathematics teacher is to consult with the teachers in the other subject fields for the purpose of creating programs to solve some of the problems that they may be working with.

If a time-sharing computer is not available, then the students are to write the programs as theoretical programs which is the first step for testing out a "bug-free" program.

It is strongly suggested that the students be given hands-on experience with using the time-sharing computer. If a time-sharing computer is made a part of the mini-school, many of the disciplines will be able to use it for various types of tasks. In any event, at the least, a visit should be made to one of the time-sharing companies and some computer time should be rented from the company at its own installation to provide the hands-on experience.

SCIENCE

Purpose:

To help pupils see that complex machines are made up of combinations of simple machines.

To give pupils an experience in working on an assembly line production.

To give opportunities for free expression of creative ideas to technology.

Objectives:

Upon completion of work in this unit, students should be able to:

1. Point out simple machine-components of complex machines used at home, in school shops, and in the community.

2. Demonstrate the manual skills acquired including the ability to measure in the mass production of sensitive laboratory balances for science classes.

3. Show drawings and mock-ups of inventions pupils thought up to make the life style better for the individual and the community.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Review simple machines. Point out the 3 classes of levers, the inclined plane and screw, and the wheel and axle.

2. Field trip: Go see the solid waste disposal plant and re-cycling center for ecological improvement of the community. Write up summary of impressions, including simple machines observed as components of complex machines.

3. Enlarge a Rube Goldberg drawing of a machine on an 18 x 24 inch poster board or on a transparent sheet for use with the overhead projector. Explain it to the class. Tie-in with Graphic Arts, Language Arts.

4. Build a mock-up of your drawing "invention". Demonstrate it at the fair. (See Activity 5). Tie-in with Industrial Arts.

Activities - Continued

5. Organize a school fair or invention show of drawings and models of tomorrow's technology.

6. Take apart the broken junk of the science store room looking to see what simple machine the parts represent, and where electro-magnetism is involved. Save all nuts, bolts and washers. Notice how each piece comes off. Suitable objects for disassembly are electric motors and generators from discarded washing machines, refrigerators, automobiles, record players, etc. Gear drives and lever action sequences are valuable from old household machinery. (Be sure to give praise and credit to pupils for bringing in these junked items from home or the community. It takes real labor and mechanical ingenuity to extract such items from larger machines to say nothing of transporting them to school.) Have pupils explain the simple machines or electro magnets involved in their machinery and demonstrate the action where possible.

7. Establish stations around the room where each machine can be examined and tinkered with. Constructive tinkering is a real learning experience. At the end of this learning activity have pupils reassemble parts for storage until needed again.

8. Show film on the assembly line production of any item e.g. "How is Clothing Made?" Discuss the film, helping pupils perceive the importance of each worker's conscientious effort and attention to detail. Tie-in with Social Studies.

9. Introduce the laboratory balance (See bibliography reference) as a useful tool for the science room and one which would be a good object for mass production. They may keep it at the close of school. Help students organize for its mass production. It will require use of the woodshop and home economics period. Coordinate with these teachers. Tie-in with Industrial Arts, Home Economics.

10. After sawing and drilling operations are done in

Activities - Continued

woodshop, sanding, finishing, and assembly should be done in the science classroom. There should be enough scale parts made to provide a scale for every pupil or each two pupils. Make extra parts to compensate for breakage and improper fit.

11. Calibrate the scales for tenths of grams by using the number of staples as units of measure. Calibrate it for grams by using the number of paper clips and nickels (5g.). Tie-in with Mathematics.

12. Discuss the whole assembly line process, its organization and how it could be improved, streamlined, etc. What roles did different members of the class play in the mass production process? Refer to the learning gained from Unit 4: Administration and Management.

13. Have pupils make Rube Goldberg-type drawings of how machines could be constructed to do this mass production. Give points for each simple machine clearly recognizable in each drawing. Have the better drawings transferred to transparencies for projection and let pupil explain the machine's operation to the class. Let pupils vote on the best designe machines in each class. Tie-in with Art, Industrial Arts.

Materials:

1. Books
   a) Beurey, Ronald. Electronics for Everybody, New York, New York: Popular Science Publishing Co. (Harper & Row), 1970. Gives tips on working with electronic equipment, for mature reader.
   b) Brumbaugh, Robert S. Ancient Greek Gadgets and Machines, New York, New York: Thomas Y. Crowell Co., 1966. (for a mature reader)
   c) Buckwalter, Len. Electronic Games and Toys You Can Build, Indianapolis, Indiana: Howard W. Sams & Co., Inc., 1967.
   d) Goldberg, Reuben L. Rube Goldberg vs. the Machine Age, Hastings House, 1968.
   e) Lawrence, George L. Inventors Idea Book, Indianapolis, Indiana: Howard W. Sams and Co., Inc., 1967. Photofact Publication 20232, mature reader.

Materials - Continued

2. Films: (Twining media center)
   a) #2045 "Automation: Push Button Problems". b/w, 11 min. (S) Shows processes and effect on the economy.
   b) #1828 "How is Clothing Made?" Story of Mass Production. b/w, 14 min. (P-I). Shows factory mass production of shirts.
3. Adjustable wrench
4. Socket wrenches or other wrenches as available
5. Screw drivers, Phillips and conventional
6. Pliers
7. Plier-wrench
8. 20 razor blades per class (an injector is the best type).
9. Acetate sheets for transparencies
10. 5 felt-tip drawing pens
11. Glass cutter

BUSINESS EDUCATION

Purpose: To show the evolution of the typewriter and how it affects the life of the clerical workers.

To develop an awareness of the "service" aspect that has developed from the use of more modern office equipment.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify and compare different parts of the manual typewriter and the electric model; change the ribbon on his machine, and be able to clean the typewriter.

2. Type a short theme or report utilizing at least one footnote notation on some aspect of the typewriter--its history, trends in design, etc.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Do specific drills on using the different parts of typewriters, both portable, standard. Parts should include aligning scale, ratchet release, and variable line finder.

2. Teacher demonstration on changing ribbons and techniques used in cleaning keys, etc.

3. Resource Person: Contact an employee of firms such as the following to discuss job opportunitie in the maintenance of office equipment:
   a. Metropolitan Office Machines, 1 Thomas Circle N.W., 636-5532.
   b. Leon Office Machine Co., Inc., 623 H St., N.W 737-3145.
   c. Inter-City Business Machines, 1 Thomas Circle, N.W., 638-5532.

   Have students construct list of related occupations.

4. Panel Discussion. How the typewriter has played a leading role in the advancement of women into the business world. Tie-in with Social Studies.

Activities - Continued

5. Debate. The Male Typist vs. the Female Typist. Informal discussions on how the refinement of the typewriter has affected working conditions, amount of output, etc.

6. Collect pictures of different makes of typewriters--particularly old models. Compare characteristics, etc.

7. Library work, "History of the Typewriter."

Materials:

1. Books:
   Russon Allien R. and S.J. Wanous. Philosophy and Psychology of Teaching Typewriting, New Rochelle, New York: South-Western Publishing Co., 1960.
2. Pamphlets:
   "How to Be a Carbon and Ribbon Expert" The Carter Ink Co., 239 First Street, Cambridge, Mass. 02142 (25 copies available)
3. Magazine:
   Flood, Hazel A. "The Invention and the Development of the Typewriter", The Journal of Business Education, XXIV (Jan. - Apr., 1949).
4. Films:
   "Electric Typing Time". MP-So-16mm 1 reel, 20 min. color. Obtain from IBM.
   "Typewriter in Business" (Shows various applications and uses of typewriters and typewriter attachments) MP-So-16mm 1 reel, 21 min. Request from Remington Rand Division.

Notes:

Tie-Ins with Specific Career-Related Skills

Skill in repairing typewriters and other office machines is important in such occupations as office maintenance technician, typewriter repairmen, office machines service manager, office equipment salesman

INDUSTRIAL ARTS

Purpose: To show the students how the evolution of machinery has changed the lumber industry and to give them an introduction to the history and current practices of the lumber industry.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify several types of trees in the Washington Metropolitan Area and describe uses for each type of wood.

2. Describe the process that occurs within the lumber mill complex, preferably using a diagram or flow chart.

3. Compare and contrast the types of equipment used in a lumber mill complex today with that of a previous time. This should include chain saw, hydraulic barker, jack ladder, power saw.

4. Define and describe logging.

5. List possible career opportunities in the lumber industry, and describe one such opportunity.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Collect samples of leaves from trees in the area, and identify the trees using resource materials. Research practical uses for each type of wood and collaborate in the preparation of a display of the information. Tie-in with Art, Science.

2. Field trip: Hechinger's Lumber Yard for observation and discussion with employees of their jobs. Make list of occupations observed.

3. Prepare a collage of different samples of wood, or make an item of wood for use at home. Tie-in with Art.

Activities - Continued

4. Quests:
   a. Prepare a presentation contrasting an early lumber mill with a current lumber mill complex.
   b. Prepare oral/written reports or posters on the evolution of the power driven saw or some other machine used in the lumber industry.
   c. Prepare a display showing alternate means for transporting logs to the lumber mill with emphasis on types of equipment.
   d. Prepare oral/written reports on forestry: the role of Forest Rangers, the concerns of conservationists, the history of the giant redwoods, etc.
   e. Library search for early folk stories about logging and the lumber industry (e.g. Paul Bunyan).
   f. Research to determine impact of plastics industry on lumber industry.

Materials:

1. lumber
2. charts
3. diagram paper
4. glass

Notes:

Tie-Ins with Other Subject Areas

Mathematics -- prepare a graph or table to show the comparative frequencies of various kinds of trees in the Washington Metropolitan area.
Science -- presentation on the use of "rings" to estimate the ages of trees; concept of how to chop down a tree so that it falls in a particular direction.
Social Studies -- prepare a map showing estimated density of various kinds of trees in the Washington Metropolitan area; support or research for Activity 1, 4; preparation of questions to ask in conjunction with field trip, Activity 2.

Tie-Ins with Specific Career - Related Skills

Skill in knowing how to use, grade lumber, manufacture

Notes - Continued

and sell types of equipment would be important to:

Band Saw Operator	Sawmill Operator	Furniture Manufacturer
Truck Driver	Equipment Salesman	Builder
Lumber Salesman	Paper Salesman	
Logger	Furniture Designer	

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 8 - Metal Manufacturing and Processing

Topic: Metal Manufacturing and Processing

Purpose: To explore the job opportunities in foundry (metal working-mining and refining) and to develop a measure of skill in the use of common tools and machines.

To learn and know the methods of (casting) foundry used in industry.

Main Ideas:

1. Foundry (casting) is one of the basic processes used in industry. It is used to make a variety of metal shapes, from large castings to small decorative objects.

2. To appreciate the part foundry plays in the construction of parts for ships, autos and airplanes.

Quests: Layout and design patterns (objects) for casting.

Career Opportunities:

1. Unskilled

bench hand
coreoven tender
hammersmith helper
laborer/construction
machinist apprentice
maintenance man
production helper

2. Semi-skilled

autoworker
assembler/factory
boiler and furnace operator
boring bar operator
chipper
coremaker
cylindrical grinder
craneman
drill press operator

Career Opportunities -- Continued

engine lathe operator
evaporator man
foreman/factory
foundryman grinder
machine tool operator
milling machine operator
miner
pickler
press operator
sheetmetal worker
stillman
tool crib attendant
upsetterman
welding setup man

3. Skilled

arc welder
blacksmith
boiler maker
casting salesman
chemical analyst
cupola operator
draftsman
engineering technician
estimator
layoutman
maintenance machinist
metallurgical technician
pattern maker
pottery maker
tool, die and gauge maker
welder

4. Professional

chemical engineer
chemist
industrial designer
industrial engineer

Career Opportunities -- Continued

metallurgical engineer
mineralogist
mining engineer
test engineer

LANGUAGE ARTS

Purpose:

To explore job opportunities in metal manufacturing and processing.

To realize the importance of iron and steel in modern living.

To appreciate the range of goods using metals.

To develop a linguist's sensitivity to everyday language.

To improve skill in using appropriate levels of language.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. List job opportunities in the metal industry and/or describe the tasks of various workers in the metal industry.
2. Explain the usefulness of iron and steel in modern living.
3. List 10-15 products using metal.
4. Be able to identify the following language patterns when given examples : colloquialisms, dialects, slang, cursing/swearing.
5. Show skill in using the following levels of language: standard, non-standard, literary.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. See films on metal manufacturing:
   a. "Story of Coal" (11 min., Knowledge Builders)
   b. "Story of Steel" (11 min., Knowledge Builders)
   c. "Drama of Steel" (U. of Iowa)
   Have students summarize films, for use in later activities.
2. See films on language manufacturing:
   a. "Who Makes Words?"
   b. "Word Building in our Language"
   c. "A Definition of Language"

Activities -- Continued

d. "Dialects"
e. "Words that Don't Inform"
f. "Do Words Ever Fool You?"
g. "The English Language: How it Changes" (Coronet, 11 min.)

Note: Unless otherwise stated, the above films are from the U. of Iowa.

3. Alphabetize careers related to metal manufacturing and processing.

4. Organize a classroom display to illustrate the Bessemer process.

5. Perform a cut-and-paste research job on the range of goods using metal. Label each clipped picture as to which part is metal, including name of product. (Minimum--3 pages) Tie-in with Industrial Arts.

6. Perform a language research job with a scratch pad. Jot down "flavorful speech" heard at home and in school. Share findings with class, telling whether quoted material is colloquialism, dialect, or slang.

7. Make a list of 10-15 products using metal: attach to display board.

8. Using a selected level of language (standard, non-standard, literary), write a personal essay explaining why language is a product of the people.

9. Participate in a culmination program: share essays, lists, research data with another class.

Materials:

1. Films (See Activities above)
2. Corrugated paper (colored) and construction paper for classroom display board. Letter sets may be needed too.
3. Quantities of scratch pads for language research activity.
4. Classroom supply of paste and scissors.

Notes:

Tie-Ins with Specific Career-Related Skills:

Knowledge of jobs in metal processing and manufacture, appreciation of wide use of metal today, sensitivity to language, and improved skill in using appropriate levels of language:

- Inspector
- Foundry engineer
- Mechanical draftsman
- Mathematician
- Research personnel
- Metalcraft teacher
- Metallurgist
- Estimator
- Manager

MATHEMATICS

Purpose: To show the student the role of geometry and measurement in designing and producing metal materials.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify and illustrate: point, line, curve, closed curve, and plane.
2. Find the surface area of: rectangular prism, cube, cylinder, pyramid, cone, sphere.
3. Find the volume of: rectangular prisms, cylinders, cones, pyramids, spheres.
4. Identify and use appropriate formulas for perimeter, area, and volume to solve meaningful problems.
5. Apply the following concepts in solving problems in measurement:
   a. precision of measurement
   b. greatest possible error
   c. relative error
   d. significant digits
   e. rounding number as it affects precision (approximation)
6. Calculate percents.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. The students are to observe all the shapes and objects found in the kitchen such as baking, boiling, poaching, deep-fat frying, roasting, broiling, and frying pans, and are to name the geometric figures found in each. Tie-in with Home Economics.
2. The students are to measure (ruler) the necessary dimensions in order to calculate the perimeter, area, and volume of all the geometric figures in #1. The students are also to determine how much of a certain type of food can occupy each type of cookware. For example, how many hamburgers of a certain diameter can be cooked at one time in the

Activities -- Continued

same pan. Discuss relationship of findings to design of metal equipment. Tie-in with Home Economics.

3. The students are to design an object of metal for use in the home. The design should include specifications of size, and should indicate geometric figures used. Tie-in with Industrial Arts.

4. The teacher is to find out the amount of each type of metal material used to make a cooking utensil, gasket, television part, etc. The students are to compute the percent of each metal material found in the utensil. Tie-in with Science: fusing metals.

Materials:

1. Books:
   a) Kenyon, Anne. Modern Elementary Mathematics, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.
   b) Hudson, Frank and Donald Adlong. Introduction to Mathematics, Reading, Massachusetts: Addison-Wesley Publishing Company, 1970.
2. ruler
3. vernier caliper
4. micrometer caliper
5. access to items commonly found in the kitchen and the home
6. magazines with advertisements of metal equipment

SCIENCE

Purpose: To give pupils an opportunity to do some metal refining processes in miniature in the laboratory.

To help pupils recall the molecular realignment that takes place in a chemical change as studied in the seventh grade and to reinforce their skills in writing chemical equations.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Explain/describe and demonstrate how a metal ore may be heated to remove the oxide and produce metallic materials.
2. Describe and demonstrate how a high degree of purity may be obtained by electro-refining.
3. Explain and write equations showing chemical changes in terms of molecular breakdown and realignment of the constituent ions.
4. Relate the early history of iron or aluminum ore refining in this country and/or in the Washington, D.C. area.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Discuss with pupils where iron, lead, aluminum, and mercury come from. Introduce the term "ORE." Locate on a map sources of important ores. What ores are found locally (bog iron: limonite and hematite)?
2. Select teams to refine minute amounts of three oxides of metal in the following ways:
   a. Mercuric Oxide: Heat in a clean test tube over a hot flame with a 1-hole rubber stopper fitted with a short glass tube. Observe the upper, cooler portion of the tube. Test the escaping gas with a glowing splint. Remove from heat and observe what happens to the HgO as the tube cools. What chemical changes are observed?
   b. Lead Oxide: Make a hollow in a piece of charcoal

Activities -- Continued

and put a little lead oxide in it. Using a hot flame and blow pipe, direct the flame into the hollow containing the lead oxide. Continue until metallic lead is observed. What happens to the oxygen? (Write reactions in words, then substitute symbols for the words.)

c. Copper Oxide: Place a few grams of copper oxide in a test tube and cover it with powdered charcoal. Fit the tube with a 1-hole rubber stopper and a bent glass tube to bubble the effluent gas in a test tube of limewater. Heat the mixture of CuO and carbon for several minutes. What gas is driven off? Allow the hot test tube to cool. Tap out its contents into a beaker. Cover it with water and mix thoroughly. Decant the liquid. What remains at the bottom of the beaker? Write the reactions in words; then, substitute symbols for the words.

3. Have each team show their apparatus and explain to the class how they reduced their metal oxide to more pure form; which chemical compounds were used, and what happened to the unwanted oxygen in each case. Help them develop the reduction process in words, and then substitute symbols of elements for the words. Work on equation writing skills. Review the Periodic Chart of the Elements.

4. Discuss how very pure metals are made. Have a team demonstrate electro-refining of copper by the copper plating process.

5. Do historical research on the following:

a. John Foxhall (Revolutionary War figure)
b. Foundry Methodist Church, (16th and P Sts., N.W.)--its first endowment source.
c. Hopewell Village, Pa. (U.S.Nat'l. Park Service)
d. Bog iron: Limonite and hematite
e. Charles Hall: Aluminum
f. Bessemer: Pig iron.

6. Quest: Take a small amount of local iron ore--powder it; mix it with powdered charcoal and limestone; heat to a high temperature; add air with a blow pipe.

Activities -- Continued

Can it be reduced to iron? Explain what happens. Write word equations for the chemical changes. Substitute symbols for the words.

7. Quest: Take a family drive northwest to Hopewell Village, Pa., near Reading. Take the National Park Service guided tour of the iron foundry there. Report on your visit to the class. Use diagrams to explain the layout of the iron works. Relate classroom work to similar processes in iron works.

8. Quest: Demonstrate the proper way to anneal various sheet metals for hammering into shape. Shape a simple dish or bowl from flat sheet copper or aluminum. Tie-in with Industrial Arts.

9. Quest: Demonstrate objects made from: pig iron, wrought iron, steel. Give the properties of each and the uses of each.

10. Quest: Make a collection of ore-bearing rocks telling what each one is; where it comes from; and what metal is extracted from it.

11. Quest: Report on the old gold mining operation at Great Falls, Md. Tie-in with Social Studies.

12. Quest: Demonstrate etching of metals as one way to make designs in metals and the method by which printed circuit boards are made for electronic devices. See the Industrial Arts teacher and the Boy Scouts of America Book on Metal Work (listed in Materials below).

Materials:

1. Books:

a. Boy Scouts of America. Metallurgy. New Brunswick, N.J., 1966.
b. Boy Scouts of America. Metal work. (#3312) New Brunswick, N.J., 1969.
c. Colby, C.B. Aluminum, The Miracle Metal. New York, New York: Coward-McCann, Incorporated, 1958.
d. Hibben, Thomas. Sons of Vulcan: The Story of

Materials -- Continued

Metals. New York, New York: Lippincott, 1940.

e. Meyer, Jerome S. Iron and Steel. Cleveland, Ohio: World Publications, Incorporated, 1966.
f. Newcomb, Ellsworth and Hiagh Kenny. Miracle Metals. New York, New York: G.P. Putnam's Sons, 1962.
g. Pearl, Richard M. The Wonder World of Metals. New York, New York: Harper and Row, 1966.
h. Tracy, Edward B. The New World of Copper, New York, New York: Dodd Mead and Company, 1964.
i. Wohlrabe, Raymond A. Metals. New York, New York: Lippincott, 1964.
j. Zarchy, Harry. Metal craft. 1953.

2. Films: (Twining Media Center)

a. # 698 "Iron: Product of the Blast Furnace," b/w, (11 min.) Shows process and raw materials.
b. # 269 "Iron Ore Mining," b/w, (13 min.) Shows open pit and transport to blast furnace.
c. #1011 "Copper, Steward of the Nation," b/w, (13 min.) Development of the industry, mining, refining, uses.

3. Mercuric Oxide
4. Lead Oxide
5. Copper Oxide
6. Charcoal
7. Limewater
8. Blow pipes (metal or glass)
9. Copper sulphate
10. Utility dry cell battery

SOCIAL STUDIES

Purpose: To make students aware that the technological advances in metal processing have placed the United States in an advantageous position in international trade.

To give students a broader concept of the many careers available in the processing and manufacturing of metals.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Explain the importance of steel and its part in making America the great nation it is today.
2. State the contribution made by Andrew Carnegie or another American of the steel industry to the growth and development of the United States.
3. List the major steel producing companies of the world, especially those in the United States.
4. List some of the career opportunities in this industry.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Using a map of the United States, identify the iron ore and steel-producing regions.
2. Individual Quests: Write profiles on Henry Bessemer and Andrew Carnegie for oral presentation.
3. Individual Quest: Make a display of samples of metals vital to our daily lives. Tie-in with Art.
4. Individual Quest: Research and report on some of the instances in which plastic is replacing metal. Tie-in with Industrial Art, Home Economics.
5. Field trip: Visit the Kenilworth Foundry and the Smithsonian Institution's Division of History and Technology. Make an oral/written report to the class, including occupations in the industry.
6. Group Quest: Make a graph of the steel-producing

Activities -- Continued

countries and indicate the volume of steel produced by each. This may be displayed on bulletin board.

7. Group Quest: Make a collage of the maps of countries (that you draw or find in books or magazines) to which the United States exports steel. Under each country indicate the volume in tons or dollars that is imported. This may also be displayed.

Materials:

1. Films: (Free; pay return postage)

   a. "Steel Wire for Industry" and "Steel Wire in Agriculture" (1957), 16mm Sound (24 and 25 1/2 mins., respectively). (Four to six months advance booking.)
   Keystone Steel and Wire
   Audio-Visual Department
   Peoria, Illinois 61607

   b. "Steelmaking Today," (1967) 16mm Sound (29 min.) Two weeks advance booking.
   U.S. Department of the Interior
   Bureau of Mines
   4800 Forbes Avenue
   Pittsburgh, Pennsylvania 15213

2. Free materials are available from the following firms:

   a. Bethlehem Steel Corporation
   Bethlehem, Pennsylvania

   b. American Metal Climax, Inc.
   1270 Avenue of the Americas
   New York, New York 10036

   c. Republic Steel Corporation
   Republic Building
   Cleveland, Ohio

   d. Revere Copper and Brass, Inc.
   230 Park Avenue
   New York, New York

Materials -- Continued

e. Aluminum Company of America
Pittsburgh, Pennsylvania

f. The Anaconda Company
25 Broadway
New York, New York

g. Cesco Steel Products Corporation
5601 West 26th Street
Chicago, Illinois

h. E.I duPont de Nemours and Company, Inc.
Wilmington, Delaware

i. Interlake Steel Corporation
135 Street and Perry Avenue
Chicago, Illinois

j. Kaiser Industries Corporation
300 Lakeside Drive
Oakland, California

k. Kennecott Copper Corporation
161 East 42nd Street
New York, New York

l. Kennametal, Incorporated
Latrobe, Pennsylvania

3. Books:

a. Calderwood, James D. and Fersh, George L. Economics in Action, New York: Macmillan Company. 1968.

b. Casner, Mabel and Gabriel, Ralph. Story of the American Nation, New York: Harcourt Brace and World, Inc. 1967.

c. Linder, Bertram. Economics for Young Adults. New York: W.H. Salder, Inc. 1971.

d. Smith, Augustus H. et al. Economics for Our Times, New York: McGraw-Hill Book Company, Inc.

Materials -- Continued

4. Samples of metals (Activity 3)
5. Map of United States
6. Chart/poster paper

BUSINESS EDUCATION

Purpose: To become aware of the part steel plays in the construction of parts for industry and to show how travel and transportation services influence the distribution of these parts.

Objective: Upon completion of work in this unit, the student should be able to:

1. Type forms and labels used in shipping freight.
2. Define orally terms used in shipping.
3. Discuss job opportunities available in metal work by pointing out personal advantages and disadvantages in such work as seen by each individual.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Route shipment of freight between such points as New York and San Francisco, etc.
2. Type way bills, order bills of lading, shipping labels, etc. Include f.o.b. destination/shipping point.
3. Type purchase orders. Tie-in with Mathematics.
4. View films on steel industry, and discuss key ideas.
5. Develop the concept of time and motion studies and carry it over into clerical tasks. (Teacher demonstration).
6. Students will compare shipping methods--truck, railroad, airplane, etc. Consider such things as speed rates, service schedules, expense of packing demurrage, etc. (criteria for selection of a carrier). Tie-in with Mathematics.
7. Students and teacher will conduct buzz sessions on controversial topics such as:

   "Can a worker on the assembly line take pride in what he is doing?"
   "Automation has eased work vs. automation is an enemy."

Activities -- Continued

"How can a blue collar vs. a white collar worker improve his lot?"
"Advantages of voluntary overtime, inverse seniority."
"Absenteeism as viewed by labor and management."

Tie-in with Social Studies.

8. Discuss the question: "Could transportation services as we know them, exist today without the steel industry?" Consider the construction of trains, railroads, trucks, highways, airplanes.

Materials:

1. Books:

   a. Tonne, Simon, and McGill. Business Principles, Organization and Management, 2nd Edition. New York, New York: Gregg Division, McGraw-Hill Publishing Company, 1963.

2. Booklets:

   a. "Steel in the Making" (36 pp.) an address entitled "A Career and How to Make Good in It" Bethlehem Steel Company, Manager of Publication, Bethlehem, Pennsylvania.

   b. "The Age of Steel" and "Inland Makes Steel" (20" x 40" chart), up to 10 copies available for each school. Inland Steel Company, Public Relations Department, 30 West Monroe Street, Chicago, Illinois.

3. Films:

   a. USS Motion Pictures, a catalog of films on the steel industry, U.S. Steel Corp., Director of Public Relations, Room 1800, 71 Broadway, New York, New York.

4. Magazines:

   a. "The Assembly Line," William Serrin (Work in America). The Atlantic Monthly, Oct., 1971, pp. 62-73.

HOME ECONOMICS

Purpose: To show the students how metal manufacturing and processing is related to the culinary aspect of Home Economics.

Objective: Upon completion of work in this unit, the student should be able to:

1. State how the introduction of new metals influenced the art of cooking.
2. State which metals are best suited for different types of food preparation.
3. List the different types of metals used in cooking/eating utensils.
4. State some career opportunities in Home Economics related to this field.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Make a bulletin board display showing the different types of metals used in cookware. Tie-in with Art.
2. Take turns using the Table Service Demonstration Kit and check the samples of different metals used for eating utensils.
3. View the film: "Fine Art of Sterling Design and Manufacturing." Have students design their own pattern. Tie-in with Industrial Arts.
4. Compare the price differences and durability of the various types of metal cooking ware, including copper, cast iron, teflon, copper, aluminum, stainless steel, porcelain, glass.
5. Read a variety of cookbooks to find out the different types of cooking ware suggested for specific food preparations.
6. Teacher discussion on cookware and techniques used during the Early American period. Tie-in with Social Studies.

Materials:

1. Film:
   "Fine Art of Sterling Design" (2382) 27 min. (In color, presents stories behind some of the world's most famous silver designs.) It also includes helpful hints on table setting, flower arrangements, good taste and designs. Modern Talking Picture Service, 2000 L Street, N.W., Washington, D.C. 20036
2. Table Service Demonstration Kit: Includes--Silver-plated flatware, place settings for four in melamine dinnerware, sample spoons of sterling silver, silverplate, gold electroplate, and stainless steel.
   Shows the major steps in the manufacturing process of a silver-plated teaspoon. History, manufacture, selection, correct use, and care of tableware is included. No charge for loan. Oneida Ltd. Silversmiths, Fairfield Road, Wayne, New Jersey 07470
3. Bulletin board
4. Magazines, booklets, newspapers
5. Utensils made from metal
6. Cookbooks

INDUSTRIAL ARTS

Purpose:

To explore the job opportunities in foundry and to develop a measure of skill in the use of basic tools and machines.

To make the students aware that most foundry workers learn their skills on the job.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. State a rationale for having forge shops concentrated near such steel making centers as Alabama, Illinois, Michigan, Pennsylvania and Wisconsin.
2. Layout and design patterns of simple objects for metal casting.
3. Name some metals used in metal casting and the degrees of temperature on a Fahrenheit thermometer that are their respective melting points.
4. Construct a mold and do sand casting.
5. List some careers in metal casting and their requirements, advantages and disadvantages.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Make a list of eight commonly used metals and the temperatures at which each will melt. Tie-in with Science.
2. Make a pattern of wax; coat the pattern with a thin clay mixture; bake the clay; pour molten metal. Tie-in with Science, Art.
3. Attach the metal pattern to a metal plate; coat both with a sand and plastic mixture; remove pattern from sand and plastic shell and bake shell; put two halves of shell together and pour metal. Tie-in with Science.
4. Pack "green" sand around pattern in flask; take the flask apart to remove pattern; reassemble flask; pour molten metal. Tie-in with Science.

Activities -- Continued

5. Make a simple pencil sketch of the continuous casting process.

6. Using a map of the United States, indicate the states in which steel making centers are located by painting them gray, if not already done in another section (see Social Studies).

7. Report on casting and forging in the airplane, truck, train and automobile industries.

8. Conduct a discussion of the requirements, working conditions, salaries and career opportunities in metal manufacturing and processing.

Materials:

1. Lumber (constructing mold)
2. Clay
3. Sand
4. Aluminum (for patterns)
5. Gray paint
6. Glue
7. Poster boards
8. Drawing paper
9. Charcoal (for sketching)
10. Thermometers
11. Kiln
12. Flask
13. Die-mold
14. Films: (Free; advance booking required; borrower must pay return postage.)
    a) "Die Casting--How Else Would You Make It?" (2486) 16mm Sound (34 1/2 min.) and "Beauty in Precious Metal" (S-877) (22 min.)
    Association-Sterling Films
    Executive Offices
    866 Third Avenue
    New York, New York 10022
    b) "Casteel--Engineering Flexibility." (1967) 16mm Sound (28 min.)
    Steel Founders' Society of America
    Westview Towers
    21010 Center Ridge Road
    Rocky River, Ohio 44116

Materials -- Continued

c. "Jewels for Industry." (1966) 16mm Sound (14 1/2 min.)
Superior Steel Casting Company
Graham Avenue
Benton Harbor, Michigan 49022

15. References:
a) McKnight, Understanding America's Industries, Bloomington, Illinois. 1966.
b) Forge Shop Occupations, 610-612 (4-86). Careers, Incorporated. Largo, Florida 33540. (1967 rev.)

Notes:

Tie-Ins with Specific Career-Related Skills:

Average physical strength, manual dexterity, spatial and form perception, good eye-hand coordination, good eyesight, and the ability to work under hot and noisy conditions are fundamental to careers in metal manufacturing and processing.

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 9 - Prefabrication and Prepackaging

Topic: Prefabrication and Prepackaging

Purpose: To acquaint the student with job opportunities in prefabrication and prepackaging and to give insight into the role of the consumer.

Main Ideas:

1. With today's modern fast-paced living standards, many more goods are becoming available to the average American through advanced technology and production. Thus, the students should be aware of the scope of the availability of these goods and their inherent job opportunities.
2. In today's market prepackaged products afford the consumer more convenient shopping procedures and a wider selection of readily usuable products.
3. Prefabrication affords more jobs at the factory level and saves time and money for the consumer at the construction site.

Quests:

1. Research and report on prefabrication and prepackaging methods.
2. Communicate with companies dealing in the two fields.

Career Opportunities:

1. Unskilled

carpenter helper
laborer
material storage handler
merchandise wrapper
stock clerk
truck driver

2. Semi-skilled

laboratory technician
mailing clerk
purchasing agent
receiving clerk
retail salesperson
sanitation technician
specifications clerk

Career Opportunities -- Continued

3. Skilled

advertising copywriter
advertising salesman
architectural draftsman
cabinet maker
carpenter
detailer
display director
draftsman
estimator
food preservation consultant
food technologist
illustrator
packaging designer
real estate salesman
research assistant
transportation specialist

4. Professional

advertising audio-visual director
architect
biologist
chemist
dietician
general contractor
home economist
industrial engineer
marketing research worker
mathematician
public relations manager

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Prefabrication and Prepackaging

LANGUAGE ARTS

Purpose:

To extend knowledge of careers related to prefabrication and prepackaging.

To establish awareness of how the need to "save time" has been a prime mover in man's progress.

To see how many goods today are prepackaged for the consumer's convenience.

To learn how our language is neatly packaged into grammatical units called "patterns."

To appreciate what structural grammarians have done to "save time" in language study.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. List 5-10 jobs related to prefabrication and prepackaging and/or describe the tasks of persons employed in prefabrication and prepackaging industries. Include modular housing.

2. Enumerate 20-30 products which are prepackaged for consumer convenience.

3. Identify seven prepackaged grammatical units (patterns) in our language; specifically: those listed for Activity 6a.

4. Use form class words in analyzing sentences for their basic grammatical patterns.

5. Use sentence formulae in speaking and writing.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. Make a scrapbook, "Designs for Packaging." Tie-in with Art.

2. Work in groups to draw up lists of jobs related to prefabrication and prepackaging and enter the list in their scrapbooks.

3. Select an occupation from the lists in 2 and

Activities - Continued

prepare a written report of the tasks involved.

4. Paste in the scrapbook pictures of 20-30 prepackaged products. Tie-in with Art.

5. View films on man's need to "save time":
   a. "Story of Prehistoric Man" (U. of Iowa).
   b. "The Calendar: Story of Its Development" (U. of Iowa).
   c. "So That Men Are Free" (U. of Iowa).
   Write reviews for inclusion in scrapbook. Tie-in with Social Studies.

6. View sound filmstrips on structural design in grammar:
   a. Sentence patterns: (Coronet filmstrips)
      1) "Introduction"
      2) "Subject-Verb"
      3) "Subject-Verb-Modifier"
      4) "Subject-Verb-Predicate Noun"
      5) "Subject-Verb-Direct Object"
      6) "Subject-Verb-Direct Object-Modifier"
      7) "Subject-Verb-Direct Object-Object Complement"
      8) "Subject-Verb-Indirect Object-Direct Object"
   b. Form Class Words: (Coronet filmstrips)
      1) "What They Are"
      2) "Nouns"
      3) "Verbs"
      4) "Adjectives"
      5) "Adverbs"
      6) "Recognizing Them"

7. Analyze series of sentences until the concept of grammatical packaging is clear (that is, until the student can indicate in sentences the various concepts listed in 6).

8. Create original sentences using the pattern formulae; enter in scrapbook.

9. Create sample lists of form class words, which should then be compiled into a master list, dittoed, and pasted in the scrapbook.

Activities - Continued

10. Examine various scrapbooks of other students and prepare a brief oral/written report on interesting features observed or the most interesting scrapbook.

11. Quest. Prepare an oral/written report on what the structural grammarian has done for language study.

Materials:

1. Films (see Activity 5)
2. Filmstrips (see Activity 6)
3. Scrapbook materials
4. Occupational handbook
5. Magazines
6. Dittoed sentences for analysis
7. Ditto masters and paper
8. Scissors
9. Paste
10. Prizes for best Designs for Packaging scrapbooks

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Prefabrication and Prepackaging

MATHEMATICS

Purpose: To give the students a knowledge of the role and importance of mathematics in prefabrication and prepackaging.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Construct and interpret scale drawings using the units of centimeters and inches.
2. Make scale drawings of geometric figures such as squares, rectangles, trapezoids, triangles.
3. Interpret the directions on prepackaged foods in terms of household time and temperature measurements.
4. Calculate the weight of substances that a package may contain using household measuring devices.
5. Convert between different household measures such as cups, pints, quarts, gallons, ounces, pounds, tablespoon, teaspoon.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Calculate the actual measurements of geometric figures from scale drawings, using both centimeters and inches.
2. Given the actual dimensions of various packages and prefabricated items, construct scale drawings of these. Tie-in with Industrial Art.
3. Prepare a table showing conversions between various household measures of volume and weight.
4. Quest. Prepare a poster display and/or brochure depicting conversions of measures using drawings or pictures of measuring devices. Tie-in with Art.
5. Demonstrate, using materials such as flour, rice, sand, and water, the ability to interpret the directions of packaged foods: e.g., pancake mix.
6. Cite instances in which mathematics would be involved

Activities -- Continued

in the construction of a prefabricated item.

7. Individual Quest: Bring into class and analyze a prepackaged item for the various ways in which mathematics was used in its construction.

8. Group Quest: Take a desk or table apart (broken ones will do) in the Industrial Arts shop. Write a set of directions for reassembling it, including scale drawings of the parts involved. Have another team try to follow the directions and use their experience as a basis for revising the directions to make them clearer. Tie-in with Language Arts, Industrial Arts.

9. Demonstrate ability to tell how many minutes and/or seconds have passed or when a prestated amount of time has elapsed; also, to interpret thermometer readings.

10. Given the dimensions of a box, calculate its volume. Test the calculations by filling the box with sand or some other substances, using a measuring device.

11. Demonstrate correct interpretation of directions on packages by compiling a list of or indicating within a list the measuring instruments needed. Additionally, indicate unspecific directions such as "pinch," "dash," "drop," "smidgen" (colloquialism for a very, very small quantity), etc. Recipes may also be used.

Materials:

1. construction paper
2. household measuring devices of volume
3. time and temperature measurements (clock, thermometer)
4. ruler

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SCIENCE

Purpose: To give students an understanding of the magnitude of the problem of solid waste disposal caused by the technology of prefabricated and prepackaged products.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Calculate approximate amounts of trash generated daily and weekly in the home and school, using units of volume and/or weight.

2. State ecologically acceptable solutions for disposal of that trash and explain why each solution is acceptable.

3. Given a list of different types of solid waste, describe for one or more of them the problems involved in disposal and possible long-range solutions.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. High impact.

   a. View a film on solid waste disposal, and/or
   b. Hear a talk by a resource person on the current status of solid waste disposal programs in Washington, D.C., and/or
   c. Tour the school and school yard to compile a list of solid waste trash, particularly litter, and/or
   d. Tour the local community to compile a list of the solid waste trash, particularly litter.

2. Discuss how the examples noted in 1 above could be dealt with, including prevention of litter; and prepare a chart or table showing kinds of solid waste, kinds of disposal methods, and their relationships.

3. Measurement of trash.

   a. Using the formulae $V = lwh$ or $V = \pi r^2 h$, measure the volumes of particular examples of trash (boxes, bottles, etc.) and calculate the space required for N amounts of various trash objects.
   b. From the custodial staff find the approximate number of trash cans filled daily. Use the formulae

Activities -- Continued

for volume to calculate the approximate amounts of trash generated daily and weekly by the school. Do the same for each student's home trash disposal.

c. Have a team of students repack a can of trash as compactly as possible, by crushing or unfolding containers, breaking bottles (protected by safety goggles), etc. Remeasure the volume and prepare a graph of the results. Calculate the percentage decrease or savings in volume. Relate weight per unit of volume to density. Tie-in with Mathematics.

4. Biodegradable trash.

a. Compile a list of the trash items from Activity 1 that are and are not biodegradable (See reference list under Notes).
b. Prepare a display or presentation explaining the meaning of biodegradable and giving examples of biodegradable and non-biodegradable items.
c. Design and conduct experiments to explore aspects of biodegradability by selecting specific trash objects and treating them as follows:
   1. Burying in dirt or in the ground.
   2. Decomposing in water.
   3. Shredding before burying as in 1.
   4. Shredding and composting.
   5. Shredding before soaking in water as in 2.

   In these experiments, samples of facial and toilet tissue, paper toweling, aluminum foil, glass and plastic containers, and aluminum and tin and cardboard containers can be buried under 2 inches of soil and the amount of surface decomposition measured at intervals with a micrometer (See reference information under Notes). Tie-in with Social Studies.

5. Prepare a diagram or flowchart of the process in a modern incinerator plant; compare it with the school incinerator. Research and prepare oral/written reports on the frequency of operation of incinerator plants in the area and the school incinerator. Include a graph showing the frequency and duration of operation of the school incinerator. Tie-in with Industrial Arts, Mathematics, Language Arts.

Activities -- Continued

6. Perform research on solid waste disposal and pollution: oral/written reports and/or displays about

   a. Causes of air pollution in order of severity.
   b. Means for measuring and classifying air pollution.
   c. The nature of the air pollution index and how it is determined.
   d. Machines that can crush cans, bottles, cars; or compost garbage. Tie-in with Industrial Arts.
   e. The Sears, Roebuck trash compactor.
   f. Flow chart showing the Washington, D.C., trash and/or garbage collection system.
   g. Phosphate versus non-phosphate detergents.
   h. The activities of a recycling center.
   i. How do trash trucks crush trash? Tie-in with Industrial Arts.

7. Compile a list of local recycling centers and prepare a printed flyer.

8. Resource person. Representative of Concern, Inc., to describe the purpose of that organization. Have students ask prepared questions.

9. Experiment to measure air pollution by inspection of and measurement of the residue in jars of water placed at different distances from the school (See reference information in Notes).

10. Brainstorming session. Design strategies for getting people to purchase recyclable and biodegradable goods. Compile a list of recyclable items available in stores. Tie-in with Social Studies.

11. Individual Quest: Research and report to class on effects of new types of prepackaging or prefabrication, e.g., "boil-a-bags," modular housing, furniture in parts. Cite advantages/disadvantages to consumer.

Materials:

1. Films: (Twining)

   a. #2361 "Garbage" (I-J), C, 11 min. Show the problem with music and pictures, no narrative.

Materials -- Continued

b. #2216 "What Are We Doing To Our World?" (S-a), C, 52 min. Presents the whole scope of the ecological problem.
c. #1758 "The Third Pollution" (S), C, 23 min. Shows our solid waste problem and its relation to other ecological problems.
d. #2363 "Boomsville" C, 11 min. Animated view of man taking over virgin land and ending up with a slum.
e. #1664 "The House of Man - Our Changing Environment." B/W. 17 min. Shows present waste and pollution.
f. #1976 "Man Uses and Changes The Land," C, 11 min. Shows importance of land to man and need for wise planning.

2. Books:

a. Man's Impact on Environment, Detwyler, Thos. R., New York, New York, McGraw-Hill, 1971
b. Man and His Environment: Waste, New York, New York, Harper, 1971, Marx, Wesley
c. Third Pollution; The National Problem of Solid Waste Disposal, Small, Wm. E., Praeger, 1971
d. Science and Survival, Commoner, Barry, Viking Press, 1966
e. Our Polluted World, Perry, John, Watts, 1967
f. The Dirty Animal, Still, Henry, Hawthorne Books, 1967
g. Controlling Pollution, Goldman, Marshall I. ed. Prentice Hall, 1967
h. Not So Rich As You Think, Stewart, Geo. R., Houghton Mifflin, 1967
i. Scientific Experiments in Environmental Pollution, Teacher's Manual, Weaver, Elbert C., New York, Holt Rinehart and Winston, Inc., 1966. See pp. 28-30 for "Biodegradability of Solids" and pp. 40-42 for "Some Problems of Incineration"; pp. 1-3 "Solids in Air."

3. Local Resources for Information:

a. CONCERN, Inc. (a non-profit community service agency
2233 Wisconsin Avenue, N.W.
Washington, D.C. 20007

Materials -- Continued

Publishes ECO-TIPS, a bulletin for consumers for wise product use and disposal. Single copies on request. Also publishes fact sheets on "Solid Wastes," "Detergents," etc.

b. Washington Recycling Center
Ross Drive south of Military Road, N.W.
Nature Center Maintenance Yard

4. Wide-mouth jars
5. Gallon cardboard milk cartons (to use as containers for solid waste degrading experiments)
6. Micrometer (for measuring thickness of solid samples before and after decomposition)

Notes:

Home Economics - collaborate with Industrial Arts to give a special presentation on better and poorer means for home treatment of waste, including the mechanics of a garbage disposal unit and the toilet.
Music - find songs about pollution.

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BUSINESS EDUCATION

Purpose: To give students an opportunity to become aware of how the activities involved in prepackaging and packaging affect the purchasing motives of the ultimate consumer.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify selling features that have been incorporated in the prepackaging of specific products.

2. Perform a specific activity involved in the operation of a typical gift-wrapping service: e.g., select the materials, tie bows, use appropriate containers for different kinds of products, etc.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Field trips: Visit several retailers and find out which types of bags and boxes they use for wrapping their goods. Also, compile a list of the "gimmicks" that have been used to make packages sell.

2. Brainstorming discussion. The advantages and disadvantages to a large retail store of offering a free gift-wrapping service; why is merchandise wrapped (relate to different kinds of products); and the advantages of prepackaged merchandise for retailers and/or consumers, including package-wrapping as a means of advertising.

3. High impact. A contest for teams to compete in submitting designs for dry ("cold") cereal boxes that would include educational activities or games in the design. Tie-in with Industrial Arts.

4. High impact. Organize a gift-wrapping service for the Minischool. Different teams to assume responsibility for different functions: soliciting contributions of materials from local merchants (in exchange, perhaps, for posters in the school mentioning their contributions); scheduling the times when the service would be open and the personnel to be manning it; establishing the actual techniques to be used and training of students in the techniques.

Activities -- Continued

5. Group Quest: Undertake a consumer preference survey, such as by having students bring in packages for different brands of a given kind of product (e.g., cereals) and have samples of students vote on their preferences for the packages. Then have students analyze package for selling features. Combine with Activity 3. Tie-in with Mathematics for analysis of survey.

Materials:

1. Books:

   a. Reich, Edward, Feldman, Robert Q., and Leon Levy Basic Retailing, New York, Pitman Publishing Corp., 1960 (Unit 27 "Wrapping the Merchandise" pp. 185-191)

   b. Wingate, John W. and Samson, Harland E. Retail Merchandising, New Rochelle, New York, South-Western Publishing Company, 7th ed., 1963. (Chapter 12, Part B, "Wrapping Packages" pp. 363-367)

2. Free Materials:

   a. "A Career in Packaging?" (22512) Michigan State University, East Lansing, Michigan 48823

Notes:

Tie-Ins with Specific Career-Related Skills:

Skill in packaging techniques and correct labeling are important in occupations such as: stock clerks, shipping clerks, wrappers, retail salespersons, receiving and mailing clerks.

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HOME ECONOMICS

Purpose: To give students an understanding of prefabrication and prepackaging and the roles of manufacturers, dealers, government, and consumers in setting quality standards.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List career opportunities in prefabrication and prepackaging and describe at least one of these.
2. Describe various governmental controls established to protect consumers with respect to prepackaged goods.
3. Cite advantages and misleading practices in prefabrication and prepackaging.
4. Plan a shopping list showing economic selection of prepackaged and non-prepackaged foods.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. To research: a. Determine the meaning of prefabrication and prepackaging; b. Compile a list of examples of each, using drawings and photographs as much as possible; c. Enter a. and b. in a notebook or collaborate to prepare poster displays; and d. Compile a list of prefabricated and prepackaged products used at home.
2. Compile samples of prepackaged products: a. Compare the kinds of wrapping, sealing, and information provided; and b. Prepare comparison charts based on a.
3. Group activities:
   a. Prepare a collage of articles and pictures dealing with prefabricated housing. Tie-in with Industrial Arts.
   b. Prepare oral/written reports on:
      1) Government agencies that are responsible for controls on prepackaging to protect consumers.

Activities - Continued

2) Consumer organizations and services to aid and protect consumers.
3) The problem of unit pricing and current practices in community-located supermarkets and other food stores. Tie-in with Mathematics.

c. Prepare a display showing variations in prepackaging.

4. Individual Quest: Research and report to class on prepackaged clothing to be sewn by consumer. Calculate the unit price for the various products from Activity 4c.

5. Resource person. Home economist from a community organization or representative from a consumer protection agency to discuss career opportunities associated with prefabrication and prepackaging, and to answer student questions regarding unethical or misleading practices.

Materials:

1. Books:
Peckham, Gladys. Foundations of Food Preparation. New York, New York: The Macmillan Company, 1964.

2. Bulletins and Pamphlets:
Coles, Jessie. "Consumers Look at Labels". Greeley, Colorado: Council on Consumer Information, Colorado State College, 1964.
U.S. Department of Health, Education and Welfare. "Requirements of the U.S. Food, Drug, and Cosmetic Act". Bulletin 2, Wash., D.C.: FDA
"Career Opportunities in the Meat Packing Industry" and "Opportunities for You", American Meat Institute, 59 East van Buren Street, Chicago, Illinois 60605.

INDUSTRIAL ARTS

Purpose: To give students an overview of some of the materials commonly used in the construction industry.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List examples for each of the following categories of construction materials -- wood, metal, wire-- and cite characteristics of each.

2. Compute and compare costs for given amounts of particular construction materials.

3. Describe and if feasible, demonstrate means for conserving materials.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Compile information on the characteristics of different types of wood: hardness (hardwood vs. softwood), cost, color, weight, locality from which it comes and the most practical uses for each.

2. Given the cost in board feet of a wood and dimensions of an object (i.e., cube), compute the cost and prepare an efficient layout. Tie-in with Mathematics, Home Economics.

3. Collect objects made of metal (tools, household items). Identify the type of metal or metals from which each is made and discuss their characteristics. Consider the reasons for an object being made of metal, of that particular metal, and possible alternatives. Note: Competition between teams could be used to provide opportunity for students to practice identifying the metals, their characteristics, and their advantages and disadvantages.

4. Research the possible means for conserving metal and prepare displays or oral/written reports.

5. Prepare an oral/written report on the process of

Activities - Continued

making paper, or recycling of paper. Note: this might best be done by having teams prepare the reports as part of a competition, with Minischool judges selecting the best. Coordinate with Science recycling activities.

6. Compile data that compares different types of wire, including explanations of good and poor conductors of electricity; contrast the wires accordingly. Tie-in with Science.

7. Prepare displays or oral/written reports defining insulation, giving examples, describing different types and their usage. Note: See Note, Activity 5.

8. Create displays using samples of particular types of construction material to compare and contrast their characteristics, based on information compiled in Activity 1, 6, and 7. Tie-in with Art.

9. Individual Quest: Research and report to class on a country where wood and metal are both scarce to see what substitutes are used, e.g., India.

Materials:

1. Samples of wood (white pine, plywood, mahogany, walnut, etc.)
2. Samples of metal (tin plate, black iron,28 gauge copper zinc, aluminum)
3. Samples of insulated wire
4. Sandpaper, tarpaper
5. Films: (advanced booking required; borrower pays return postage)
   a) "The Romance of Early American Furniture" (73605)
      16mm Sound, 20 min.
      Association Sterling Films
      Executive Offices
      866 Third Avenue
      New York, New York 100022
   b) "Patterns of Time -- The Hardwood Story" (2760)
      16mm Soudd, (13 1/2 min.)
      Modern Talking Picture Service
      1212 Avenue of the Americas
      New York, New York 10036

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INDUSTRIAL ARTS

Purpose: To develop the ability to choose and use industrial products and materials and to make students aware of how materials affect operation costs.

To aid the student in his choice of future educational plans and ultimate career choices.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Select appropriate materials for prepackaging or prefabricating a product.
2. Lay out and design individual parts for a building project of their choice, e.g. bird house, dog house, etc.
3. Prefabricate the individual parts.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Design, sketch and write specifications for a package to be used for shipping his particular project. Tie-in with Art, Mathematics.
2. Produce a single-color graphic arts layout for the silkscreen process for labelling the shipping package. Tie-in with Art, Language Art.
3. Decide on the choice of material to be used for shipping the package (corregated box, wood or metal crating, plastic, etc.)
4. Write a report on the convenience and cost of prefabrication and prepackaging, including assembly line operations, mass production.
5. List examples of how transportation (shipping) can take place (C.O.D., mail, personal pick-up, railway express, air, surface transports).
6. Group Quest: Conduct a survey among classmates on the possibility of marketing the various products that were made in the classroom.

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Materials:

1. Lumber
2. Cardboard
3. Heavy-gauge plastic
4. Wrapping paper
5. Films: (free; advance booking required; pay return postage).
   "Adventures in Packaging..The Bath Tub."
   (1962) 16mm Sound (7 min.)
   Package Research Laboratory
   21 Pine Street
   Rockaway, New Jersey 07866
6. Smith and Maddox. Elements of American Industry, Bloomington, Illinois: McKnight and McKnight Publishing Company, 1966

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION,
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 10 - Textile and Clothing Industry

Topic: Textile and Clothing Industry

Purpose: To provide knowledge, experiences and skills needed in selecting, using, and caring for today's clothes and fabrics.

Main Ideas:

1. Students at this age are very conscious of how they look and dress, but may not be aware of the many operations performed on a garmet before it is ready for use.
2. Due to the great influx of man-made and easy care fabrics, as well as the natural fibers still being used, students should become aware of the importance of clothing manufacturing from an economical and practical standpoint.
3. Because of the advancement of technology, many fabrics are man-made in derivation: i.e., vinyls, simulated leather-look (cuire sauvage), fake furs, etc.
4. Many fashions and fads are not entirely original, but have been associated with dress in the past.
5. Clothing and fabric selections are based upon many functional aspects of the jet-age (space-age) living.
6. The consumer is faced with the decision-making process of buying or making clothes from an economical standpoint.
7. Many jobs exist in the manufacturing of a garment or fabrics from mixing chemicals to consumer purchases.
8. Clothes and fabrics placed on the market are designed to stimulate purchases, thus influencing the buying habits of the consumer, thus increasing the number of jobs and careers in the textile and clothing industry.

Quests:

1. Plan for a fashion show.
2. Research. Find out the costs of different fabrics on the market.
3. Design an original fashion.
4. Visit a tailor, alteration department, or a vocational school to see a demonstration on a sewing technique or skill used.
5. Trace the history of an ethnic fashion, e.g. Indian, African, etc.

Career Opportunities:

1. Unskilled

assembler (bundles or fitters)
hand spreader
laundry worker
machine spreader
material handler
trimmer

2. Semi-skilled

cutter
fashion model
finish presser and underpresser
inspector and checker
milling machine operator
pattern grader
retail salesperson
seamstress
sewing machine operator
shear operator
weaver

3. Skilled

alteration tailor
bushelman
buyer, department store
costume designer
dressmaker
fabric designer
fashion coordinator
home demonstration agent
pattern maker
purchasing agent
sample stitcher
sewing machine mechanic
tailor
texile designer

4. Professional

buyer
designer

Career Opportunities -- Continued

fashion editor
home economics teacher
industrial engineer
interior decorator
production manager
retail store manager

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Textile and Clothing Industry

LANGUAGE ARTS

Purpose:

To learn about jobs in textile and clothing manufacture.

To appreciate the many processes involved before a garment is ready to wear.

To understand the effect of fashion design on production of clothes.

To broaden one's base of knowledge for choosing and caring for various fabrics.

To realize that language is the clothing of the mind and to improve knowledge bases for language selection.

Objectives:

Upon completion of work in this unit, the student should be able to:

1. List ten jobs related to clothing and textile manufacture.
2. Describe generally (both orally and in writing) how the common fibers are prepared: cotton, wool, silk, nylon, rayon.
3. Give washing/ironing instructions for common synthetic fabrics.
4. Use four writing styles with conscious skill: narrative, descriptive, argumentative, expository.

Activities:

To accomplish the objectives, the student may engage in activities such as:

1. See the following films to broaden and deepen their knowledge about textile and clothing manufacture:
   a. "The Story of Silk"
   b. "Wool"
   c. "Cotton, Nature's Wonder Fiber"
   d. "Synthetic Fibers (Nylon, Rayon)"
   e. "What is Cloth"
   f. "Yarn and Cloth Construction" Tie-in with Science
   g. "Preview of Textile Design" Tie-in with Art

Activities -- Continued

h. "Fabrics on the Move"
NOTE: These are available from the University of Iowa.
For each film, students should be instructed to do writeup (See Activity 3a).

2. See the following films to increase knowledge of writing styles:
a. "Describing an Incident"
b. "Writing a Report: Narration"
c. "Learn to Argue Effectively"
d. "Making Yourself Understood: Exposition"
NOTE: These are available from the University of Iowa.
Each film should be seen immediately prior to doing write up in that mode.

3. Make a class booklet, Fabrics and Fashions for Youth: include the best of results from the following activities:
a. Film writeups done in four styles: narrative summaries; expository reviews, argumentative critiques; descriptive abstracts.
b. Fabric paste-ons with washing/ironing instructions written below each sample. Tie-in with Home Economics.
c. Original lists of all jobs identified in films and field trips taken during this unit.
d. Reports of field trips done in 4 styles of writing (use a different style, for each new trip).
e. Clippings and write-ups on desirable fashions for youth. Tie-in with Social Studies.

4. Write the script for a Career Fashion Show. This should include all four writing styles.

Materials:

1. Films: See Activities 1 and 2 above.
2. Colored tagboard (2 sheets for each class) and chart paper to make class booklets, Fabrics and Fashions for Youth.
3. Ditto masters and paper to reproduce script for Career Fashion Show. All participants will need a copy.

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Notes:

Tie-Ins with Specific Career-Related Skills

Job awareness, understanding of textile manufacturing processes, keener appreciation of writing styles, skill in using a variety of writing styles for self-expression.

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MATHEMATICS

Purpose: To show the student the role of mathematics in getting the most for our money relative to purchasing clothes.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Identify and use the formula for the area of a rectangle.
2. Use the operation of division to calculate cost per square unit of dimension.
3. Compare decimal fractions using the symbols
4. Convert common fractions to decimal form.
5. Use a tape measure.
6. Subtract whole numbers up to 5 digits with regrouping, when necessary.
7. Solve verbal problems in percentage for <u>selling prices</u> and <u>discount</u>.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Work with the teacher to price the cost of various materials such as cotton, rayon, knit, double knit, wool, silk, etc.; also the cost of patterns resembling clothes usually sold in the stores. Note whether the material is sold as the pattern calls for it. If the material sells in different dimensions from the pattern, the students are to calculate the amount of materials required from the manner that the material is sold and the cost of the amount of the material. The students are also to calculate the area of the material in square yards, square feet, and square inches. The students are to calculate the total cost of making each piece of clothing: cost per square yard, square foot, and square inch. NOTE: Be sure to include patterns for men's clothes. Tie-in with Home Economics.

Activities -- Continued

2. Determine the selling price that each item of goods should sell for, if they were to set up a clothing store in the school. The selling price should be based on the cost of making the clothes (labor, materials), the desired profit, and other costs they may wish to assume (e.g., shipping, advertising, etc.). The students are to compare their selling price with that of the department store or other source where most of them shop and at least one other clothing outlet and compute the percent higher and/or lower the various sales prices are. Tie-in with Business Education.

3. The students are to make all of the measurements required by a pattern, using a tape measure, and are to relate these measurements to the information on the clothing tags. For example, W40 L26 means the waist is 40 inches and the inseam leg length is 26 inches.

4. Read newspaper for advertisements of discounts on clothing and calculate the amount of money they can save on each item if the purchase of their clothing is made at the end of the season. The student is to calculate the total cost of his clothing needs for a given season, the total amount that can be saved by making the purchases at the end of the season, and the difference expressed as a percentage. Tie-in with Home Economics.

5. The student is to compare the amount of material required to make different sizes such as size 32, etc. up through size 50. Use this information to investigate the justification for an extra charge for making sizes larger than 44.

6. Compare the cost of mail order clothing with store-bought and clothing made by themselves. Tie-in with Home Economics.

Materials:

1. Clothing patterns
2. Information on the cost of clothing material

Materials -- Continued

3. Information on the cost of clothing in stores
4. Information from mail order firms: e.g., John Blair, Warren, Penn.; Spiegel; Sears, Roebuck; Montgomery Ward
5. Information that is printed on clothing tags
6. Newspaper advertisements
7. Tape measures

SCIENCE

Purpose: To provide knowledge of the fibers and weave of textiles and clothing; their insulating qualities; humidity-holding properties; and their wettability.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Make informed judgments about fabrics used in clothing as to insulating and humidity transmitting properties.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Obtain swatches of new cloth fabrics from fabric stores, pants-cuffs material included by the tailor with newly purchased slacks, etc. Be sure to get a statement of what fiber content the swatch of material contains: 55% polyester, 45% cotton; or 60% wool, 40% dacron; etc. Write this information on a slip of paper and pin it to the fabric sample. This may not be possible in every instance: the use of the microscope and comparison with known samples may clear up the mystery (just as in the crime laboratory). Where possible, cut the material samples to 2-inches square size. Save the scraps for microscopic investigation.

2. Weigh each material sample on the laboratory balance made in Science Activity #9 of Unit 6. Record the weight of each sample. Add to its weight 25 grams of miniaturized ice cubes from an ice bucket. Have students reason out why the weight of ice should be the same for all samples. Include as little melted water on the scale as possible. Wrap the material loosely around the ice cube, but with all corners and ends tucked in. Secure loosely with a rubber band. Record the time it takes for that weight of ice to melt completely in each fabric sample. Make a bar graph to show relative times for various samples of materials. Rank the materials in order of insulating property. Dry the 2-inch square samples of fabrics thoroughly. Tie-in with Mathematics.

Activities -- Continued

3. Test for transmission of moisture through the fabric samples as follows:

   a. Set up a steam generator flask with a delivery tube.
   b. Make 20 sheets of humidity-indicator paper by soaking filter paper or white paper toweling in a cobalt chloride solution. Dry it and cut to 2" x 2" size.
   c. Mount each fabric sample in the center of a sheet of notebook paper or lightweight cardboard after cutting a square 1 1/2" x 1 1/2" hole from the center of the mounting paper or cardboard. Use cellophane tape (Scotch) around the edges of the fabric to hold it to the paper.
   d. Hold each mounted fabric sample a measured distance from the steam generator so that the steam is directed against the fabric slightly (not as penetrating as a steam iron).
   e. Bring the cobalt chloride indicator paper to a measured distance behind the fabric to see if enough moisture is coming through the fabric to cause it to change color.
   f. When correct distance scales have been determined for one fabric, use all other mounted fabric samples at this same distance. Have the students rank the fabrics in order from the one that transmitted the least moisture to the one that transmitted the most. See if there is any correlation of this list with the weights and insulating properties of the fabrics. Have the students decide which fabric would "breathe" best with body perspiration. Tie-in with Home Economics, Mathematics.

4. Test each material for capillarity using a bowl of water and the 2-inch strip of material taped to a strip of facial tissue or paper towel. The lower end of the material should just touch the liquid. How long does it take for the liquid to rise through the material and wet the facial tissue? Make a bar graph of the results. Rank the materials for "wettability". Correlate with the previous data.

Activities -- Continued

5. Examine the unraveled fibers of each material under the microscope (100X). Draw tre outline of each fiber. Measure its diameter in fractions of a millimeter. Examine the weave of the cloth under low power (100X) of the microscope. How many threads are there to the square millimeter in each direction? Compare the data in chart form. What effect does closeness of weave have on wearing qualities? How does closeness of weave correlate with insulating properties and with transmission of humidity and capillarity?

Materials:

1. Books:
   a. Adler, Irving and Ruth. Fibers. New York: John Day Company, 1964.
   b. Boy Scouts of America. Textiles. New Brunswick, N.J.: 1966.
   c. Buehr, Walter. Cloth from Fiber to Fabric. New York, New York: Morrow, 1965.
   d. Cavanna, Betty and George R. Harrison. The First Book of Wool. New York, New York: Watts, Incorporated, 1966.
   e. Cooper, Elizabeth K. Silkworms and Science. New York, New York: Harcourt, Brace and World, 1961.
   f. Eberle, Irmengrade. New World of Fabrics. New York, New York: Dodd, 1964.
   g. Newcomb, Ellsworth. Miracle Fabrics. New York, New York: Putnam, 1958.
2. Films (Twining Media Center)
   a. #785 "The Clothes We Wear" B/W (11 min.) P Discusses plant, animal, and synthetic fibers.
   b. #1886 "Cotton to Clothing", C (11 min.) P-I From plant to mill to factory to cities.
   c. #1828 "How is Clothing Made--Story of Mass Production" B/W (14 min.) P-I Story of a shirt from designer to retailer.
   d. #529 "Synthetic Fibers--Nylon and Rayon" B/W (14 min.) I Recognizes science and technology in their development; shows processing.

Materials -- Continued

3. 10 rolls of cellophane tape in dispensers
4. Small samples of fabrics
5. Facial tissue or paper towels
6. Laboratory balance
7. Microscope (100X)
8. Steam Generator

SOCIAL STUDIES

Purpose: To introduce the students to the textile industry, the wide variety of careers that it offers, and the impact that it has made on the socio-economic growth of America.

Objective: Upon completion of work in this unit, the student should be able to:

1. Trace the development of the use of textiles from colonial times to the present in America.
2. State briefly the role of power-driven machinery in the making of textiles and give examples.
3. Compare the textile production in the United States with that of other countries. Include such things as kinds of textiles produced and where applicable, export/import ratios, import duties, and quotas.
4. List 10 of the many careers in this industry.
5. Give a graphic presentation of the geographic regions producing raw materials and the location of the textile factories.

Activities: To accomplish the activities, the student may engage in activities such as:

1. Compile a list of some of the various uses of textiles today. Tie-in with Home Economics.
2. Make a chart illustrating the various types of textiles and cite their geographical origin and history.
3. Make a papier maché map of the United States on which you correctly place the geographic regions producing raw materials and the locations of the textile factories. Tie-in with Business Education.
4. Listen to a lecture by the teacher or other resource persons on the importance of textiles in launching the Industrial Revolution, world

Activities -- Continued

competition in textiles and how the United States has protected its domestic industries from an influx of cheap imports. Then, make a graph contrasting U.S. textile production with that of foreign countries. Tie-in with Mathematics, Business Education.

5. Group Quest: Form a committee to research and describe the arts in textile construction and decoration as shown in museums and books, with comparison of ancient civilizations with manually and mechanically produced goods of today. Tie-in with Art.

6. Individual or group quests: Discuss or report on the following:

   a. The part played by cotton in United States history. Tie-in with Business Education.
   b. The socio-economic consequences of the replacement of cotton and wool by synthetic fibers. Tie-in with Business Education.
   c. The range wars between the cattlemen and the sheepherders.
   d. The abuses of child labor in textile mills.
   e. The resistance of southern textile manufacturers to the organization of unions. Tie-in with Business Education.
   f. The inventors and scientists of textile and allied industries.
   g. The job opportunities available in the production, consumption and distribution phases of textile industries.

Materials:

1. Books:
   a. Hollen, N. and Saddler, J. Modern Textiles, Minneapolis: Burgess Publishing Company, 1952.
   b. Labarthe, Dr. Jules. Textiles: Origins and Use, New York: Macmillan Company, 1964.
   c. Schon, Donald A. Technology and Change, New York: A Seymour Lawrence Book, Delacorte Press, 1967. pp. 143-150.
   d. Small, C.P. How to Know Textiles, New York: Ginn and Company, 1932.

Materials -- Continued

e. Stout, Evelyn. Introduction to Textiles, New York: Wiley Publishers, 1960.

2. Pamphlets and bulletins:
   a. American Fabrics Magazine Encyclopedia of Textiles. Prentice Hall, Englewood Cliffs, New Jersey 1960.
   b. Review of Textile Progress. Textile Institute, 10 Blackfriars Street, Manchester, England.
   c. Fiber Facts. Textile Fibers Department, E.I. duPont de Nemours and Company, Wilmington, Delaware 1962.
   d. Report No. 153: Women's Attitudes Toward Wool and Other Fibers, Feb. 1957. and No. 155: Teen-Age Girls Discuss Their Wardrobes and Their Attitudes Toward Cotton and Other Fibers. U.S. Department of Agriculture, Marketing and Research Division.
3. Films (Free, borrower pays return postage)
   a. "Sheep Meet the Challenge" (1966) 16mm Sound (28 min.) Union Pacific Railroad; Motion Picture Bureau; 1416 Dodge Street; Omaha, Nebraska 68102
   b. "Textile Industry" 16mm Sound (12 min.) one month advance notice--Portuguese Information; Tourist and Trade Office; (Casa de Portugal); 570 Fifth Avenue; New York, New York 10036
   c. "Through the Mill" (4100) 16mm Sound (13 1/2 min.)
   d. "Stocking Yarn, A" (2011) 16mm Sound (18 min.) one month advance notice-Modern Talking Picture Service; 2000 L Street; Washington, D.C. 20036
   e. "Visit with Hanes, A" 16mm Sound (15 min.) two weeks advance notice-Hanes Hosiery Film Library; 267 W. 25th Street; New York, New York 10001

Notes:

Tie-ins with Specific Career-Related Skills

A knowledge of design, color coordination, distribution marketing and research, fabric design, etc. is beneficial in

Notes -- Continued

such careers as: chemist, textile designers, fabric designers, model, mechanics, physicist, marketing researcher, fashion editors, farmer, fashion coordinator, colorist, seamstress, tailor, couturier.

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Manufacturing, Marketing and Distribution, Business and Office Occupations
Textile and Clothing Industry

BUSINESS EDUCATION

Purpose: To provide knowledge, experience, and skills needed in selecting, using, and caring for today's clothes and fabrics.

To show an awareness of how clothes and fabrics are placed on the market to stimulate purchases.

Objectives: Upon completion of work in this unit, the student should be able to:

1. Type a personal assessment of what clothes mean to an individual from various viewpoints, including skills that are considered essential in planning wisely as a consumer of the clothing-textile industry.

2. Select and point out different characteristics found in advertisements in the field of clothing that stimulate purchasing.

3. Wear a well-planned outfit to a simulated career/job interview dress-up day.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Field Trip: Visit display of First Ladies' Inaugural at the Smithsonian Institute. Write a brief statement of style of gown found most pleasing.

2. Individual/group quests: Clip advertisements from newspapers in which fiber content of an article is given. Classify by generic name.

3. Visit department store that carries pattern books; list the fabrics recommended by a specific brand pattern book for a specific style of garment, i.e. sportswear. Based on knowledge of fabrics, state if you agree/disagree and why.

4. Select from advertisement headlines in the field of clothing those which you believe to be well written. Find headlines for similar clothes that you believe are poorly written. Justify choice in writing.

Activities -- Continued

5. Circle and mark the various elements of advertising found in specific clothing-textile ads, headline, copy, illustration, and store logotype.

6. Make a list of different items of apparel that are needed for different activities.

7. Trace a fall-winter fashion from current men's or women's ready made apparel and/or accessories to a similar one in the past.

8. Trace the change in dress required of present-day office workers to dress styles required formerly of office workers.

9. Individual quests: List your best colors. Find swatches of materials to match your colors. Paste them in a personal scrapbook.
   a. Clip pictures from magazines or sketch pictures of an ideal outfit to wear on a job interview.
   b. Prepare an inventory of every item of jewelry and clothing you own. Use appropriate headings. NOTE: Above activities coordinated with Charm for Miss Teen. See Materials section.
   c. Design or include pictures of two or three basic outfits appropriate for wear on the job and show how they can be stretched into several combinations.
   d. Keep a record of the ads for reduction in prices of clothing items; explain why the prices were reduced.

Materials:

1. Books:
   a. Andrews, Margaret E. About Him (An Opportunity Knocks Book) Chapter 6: "Your Clothes Are Important" New York: Gregg Division, McGraw-Hill, 1968.
   b. About Her. Chapter 6: "Your Clothes Are Important".
   c. Whitcomp, Helen, Cochran, Laura. Charm for Miss Teen, New York: Gregg Division, McGraw Hill, 1969. (See Activities 9, 10, 16 in Workbook: also "Fibers and Fabrics" Chart, pp. 90-91.)

Materials -- Continued

d. Wingate, Isabel, Gillespie, Karen and Addison, Betty. Know Your Merchandise, New York; Gregg Division McGraw-Hill, 3rd ed., 1964.
e. Write to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 for Clothing Maintenance Specialist, A Suggested "Training Program", 1964. 13 pages. 20¢. Catalog #FS; 87005.
f. "Employment Outlook in the Apparel Industry", 10¢. Catalog # L2.3: 1450-94.

2. Booklet:
   a. "Your Clothing Dollar" (Money Management Booklet, 25¢) Money Management Institute, Household Finance Chicago, Illinois 60601
3. Filmstrip:
   a. "Your Wardrobe and You" Money Management Filmstrip--includes guide with teaching suggestions. $1.75.

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Textiles and Clothing Industry

HOME ECONOMICS

Purpose: To broaden the student's concept of the textiles and clothing industry and its many career opportunities.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State some of the contributions of synthetic fabrics, Scotchgard, etc. to the solution of clothing and textile problems.

2. List factors such as requirements for care, durability, etc., that will enable the consumer to buy more intelligently.

3. Classify fabrics as being natural or synthetic (man made).

4. Combine and/or balance the aesthetic, social, ethical, hygienic and economic elements which may be involved in the selection of fabrics.

5. Explain briefly the socio-economic background of the textile and clothing industry.

6. Critically discuss imposed style changes and the economic impact on clothing manufacturers, consumers.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Classify and identify fibers:
   a. The natural cellulose (vegetable) fibers.
   b. The natural protein (animal) fibers.
   c. The non-thermoplastic man-made fibers.
   d. The mineral fibers: natural and man-made.

   Make a chart with samples of each. Tie-in with Art, Science.

2. Examine fabrics for finishings; learn the names of some of the finishings. Tie-in with Science.

Activities -- Continued

3. Fabric color and design--different groups make a display showing color and design. Check colors and designs on each others charts. Tie-in with Art, Science.

4. Learn to match trade names of fibers with sample fibers.

5. Make a list of the United States fiber producers, (and show on a map).

6. Test samples of materials by putting them in water to check color fastness, shrinkage, minimum care, durable press fabrics.

7. Identify mixtures, blended fabrics and stretch apparel when given fabric samples.

8. Interviews. Assign two or three students to prepare an interview with a merchandise manager. Some questions to be discussed include:

   a. How does a store know what to buy?
   b. Where does the store do most of its buying?
   c. When are most clothes bought by the store?
   d. What happens when people do not buy certain clothes which are in a store?

9. Field Trips: Visits to:

   a. Department stores.
   b. Smithsonian Institute (If not already done, See Business Education)

10. Resource Persons: Invite speakers from:

    a. Fabric or Apparel Departments of stores
    b. Colleges and Universities.
    c. Extension Service--U.S. Department of Agriculture

    Students should prepare questions in advance.

11. Make a display with the teacher's help showing the flow of man-made fibers from producer to customer. This would include:

Activities -- Continued

a. fiber producer
b. spinners and yarn connectors
c. integrated dyeing and finishing
d. job dyeing and finishing plant
e. apparel manufacturers
f. home furnishings manufacturers
g. wholesaler
h. retailer
i. consumer

Materials:

1. Films:
   a. "Textile Industry" 16mm Sound (12 min.) Shows various aspects of the textile industry in metropolitan Portugal. Portuguese Information, Tourist and Trade Office, 570 Fifth Avenue, New York City 10036.
   b. "Through the Mill" (4100) 16mm Sound (13 min.) World famous designers of the U.S. 67-70. Textile Mill. Modern Talking Picture Service, 2000 L Street, NW, Washington, D.C.
   c. "Way It Is with Man-Made Fibers" 16mm Sound (27 min.) Du Pont de Nemours and Company, Inc. Motion Picture Section; Advertising Department; 1007 Market Street, Wilmington, Delaware 19898.
   d. "Man-Made Fibers" (color) and Man-Made Fiber Wall Chart. Man-Made Fibers Producers, Incorporated, 350 Fifth Avenue, New York City 10001
2. Samples of textiles
3. Chart paper
4. Container for testing
5. Scissors
6. Large map
7. Pamphlets
8. Magazines
9.
   a. Educational Kits: American Enka Corporation, Enka, North Carolina 28728
   b. Transparencies--Showing Principles of Creative Clothing--Visual Approach. Warden J. Golding, M and Strom, New York, New York

INDUSTRIAL ARTS

Purpose: To acquaint the student with the many materials and processes used in the textile and clothing industry and to provide information concerning the possible careers involved.

Objectives: Upon completion of work in this unit, the student should be able to:

1. List the basic textile materials.
2. Describe how cloth is made from fiber.
3. Construct a simple "loom".
4. Construct a simple knitting frame.
5. Do simple braiding and knotting operations.
6. State some occupations common in textile/clothing manufacturing.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Research the following and tell who invented it and describe what effect it had on the construction of textile materials: cotton gin, spinning jenny, spinning frame, and the spinning mule. Tie-in with Business Education.
2. Lay out (sketch) and write specifications for a simple loom and simple knitting frame.
3. Construct simple loom and knitting frame.
4. Cut a piece of rope about 18 inches long. Unravel it and take it apart. Tell what you learned from the experiment.
5. Construct a small fish net by knotting string together.
6. Secure strips of leather and braid a watch band.

Activities -- Continued

7. Visit a garment factory (Frederick, Md.), and make a list of occupations observed.

Materials:

1. Lumber for loom, frame
2. String for loom practice in knotting
3. Raw cotton samples
4. Rope samples
5. Rayon samples
6. Silk samples
7. Wool samples
8. Linen sample
9. Nylon samples
10. Leather strips for braiding

GRADE 8

CAREER CLUSTER MODULE

III

MANUFACTURING, MARKETING AND DISTRIBUTION
BUSINESS AND OFFICE OCCUPATIONS

Unit/Topic 11 - Regulatory Agencies

Career Development Curriculum Guide: GRade 8
Manufacturing, Marketing and Distribution, Business and Office Occupations
Regulatory Agencies

SOCIAL STUDIES

Rationale: In 1888 President Grover Cleveland made the following statement concerning big business: "Big business forms trusts and monopolies while the citizen is struggling far in the rear or is trampled to death beneath an iron heel...

"Corporations which should be carefully restrained creatures of the law and servants of the people are just becoming the people's masters..."

In an effort to limit these abuses, the federal government began to study ways in which it might effectively deal with the problem. In this unit the students will learn what steps the government has used to combat the ill effects of "run-away" business practices.

Career Opportunities:

1. Unskilled

   clerk
   general office worker
   messenger

2. Semi-skilled

   audit clerk
   civil service worker
   research assistant

3. Skilled

   administrative assistant
   auditor
   FBI Agent
   financial analyst
   legal secretary
   legislative assistant
   lobbyist
   research librarians
   reference librarian
   treasury agent

Career Opportunities -- Continued

4. Professional

accountant
congressman
historian
lawyer
political scientist
range conservationist
Senator
soil conservationist
statistician

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SOCIAL STUDIES

Purpose: To have students learn how the Federal Government regulates various aspects of business and industry.

Objectives: Upon completion of work in this unit, the student should be able to:

1. State orally or in writing some of the reasons why it is necessary for the government to police the actions of business and industry.

2. List and describe briefly one or more examples of specific measures taken by governments to curtail the abuses created by the age of industrialization and big business.

3. Describe briefly one or more present day problems about which individual reformers and reform groups are particularly concerned and why.

4. List and describe briefly five Federal regulatory agencies and their functions.

Activities: To accomplish the objectives, the student may engage in activities such as:

1. Collaborate in reviewing and compiling a list of abuses of the early industrial era.

2. Prepare displays based on Activity #1.

3. Collaborate in compiling a list, based on research of the various Federal regulatory agencies, including the functions of each, how each is organized, key present personnel, and the main current problems.

4. Field trip to the Bureau of Standards.

5. Resource persons or speakers from one or more agencies.

6. Prepare displays based on 3, with special attention to magazine and newspaper articles.

7. Prepare, publish, and distribute a brochure based on Activity #3.

Activities -- Continued

8. Teacher-led reading and discussion of the Fortune Magazine article, "How Kennecott Got Hooked with Catch-22", (Sept. 1971, p. 99).

9. Quests.

   a. Prepare a display to illustrate horizontal and vertical conglomerate or trusts.
   b. Research and report orally/in writing on the medieval practice of granting monopolies to favorites of the king regardless of the public interest.
   c. Research and report orally/in writing the major provisions of the Sherman Anti-Trust Law; the Federal Trade Commission; the Anti-Trust Division of the Department of Justice; Securities and Exchange Commission; Food and Drug Administration; Interstate Commerce Commission; and the Civil Aeronautics Authority.
   d. Research and report orally/in writing on the history and present situation of major sports vis-a-vis anti-trust regulations (e.g., the Curt Flood case).
   e. Research and report orally/in writing on subjects such as: why certain monopolies are permitted to operate with government sanction (post office, telephone company); the Ralph Nader organization; current activities of big business which require governmental intervention (e.g. pollution); Fortune Magazine article, "Corporate Care for Kids" (Sept. 1971, p. 104); and what happens when a food is declared unsafe (the Bon Vivant botulism case).
   f. Research and report on deceptive labeling, fraudulent advertising, cease and desist orders, interlocking directorates, price-cutting, price-fixing, tying contracts.

Materials:

1. Film:

   a. "The Work of the Federal Reserve System". Available free from the Federal Reserve Library.

Materials -- Continued

2. Magazine:

   a. Fortune Magazine, "Corporate Care for Kids" and "How Kennecott Got Hooked with Catch-22", September 1971.

3. Books:

   a. Casner, Mabel B. and Gabriel, Ralph N. Story of the American Nation, Chapter 23, New York: Oceana Publications, Inc., 1967.

   b. Cushman, Robert E. The Independent Regulatory Commissions, New York: Oxford University Press, 1941.

   c. Gelormino, Gerald and Gotti, Margaret R. The Challenge of Our Heritage, Dobbs Ferry: Oceana Publications, Inc., 1970.

   d. Hall, J. Oliver and Kiinger, Russell E. Problem Solving in Our American Democracy, New York: American Book Company, 1958.

Notes:

Regulatory Agencies: Listed below are some regulatory agencies which are vital to this unit:

Federal Government

1. Atomic Energy Commission - Regulates control and use of nuclear materials.

2. Civil Aeronautics Board - Has economic regulatory powers over civil aviation within the U.S. and between the U.S. and foreign countries.

3. Consumer and Marketing Service, U.S. Department of Agriculture - Exercises continuous supervision over processing of meat, poultry, and egg products. Trained employed by the government in every large slaughter-house and meat-packing company.

Notes -- Continued

4. Environmental Protection Agency - Surveillance of potential municipal and industrial pollution hazards.

5. Federal Aviation Administration - Establishes safety regulations for airlines, supervises training of pilots, among other responsibilities.

6. Federal Communications Commission - Regulates all telephone and telegraph service which crosses state lines. All radio and television stations are under the control of this commission. It grants licenses to operate; assigns wave lengths, hours of broadcast and amount of power that may be used.

7. Federal Deposit Insurance Corporation - Requires that banks comply with truth-in-lending, consumer credit, regulations. Requires reports of conditions and income of banks.

8. Federal Maritime Commission - Investigates employment and wage conditions on subsidized ships, and incorporates minimum manning scales and reasonable working conditions for all employees on all types of vessels receiving operating differential subsidy. The commission must hear complaints against the wages and conditions it has established, and thus has final authority for the administration of its regulatory. (Note: the transportation Act of 1940 took all jurisdiction over domestic waterways from the Commission and gave it to the Inter-State Commerce Commission.)

9. Federal Power Commission - Regulates public utilities that sell services or products across state lines. It issues licenses and permits for non-Federal hydroelectric power projects; regulates rates to be charged customers. Transportation of natural gas in interstate commerce comes under FPC, but there has been much controversy on such control.

10. Federal Reserve System - The Board of Governors has supervision over the whole system of banking

Notes -- Continued

in the United States and makes many of the rules governing member banks. The Board has power to decide what loans banks should make and at what rate of interest. There are 12 Federal Reserve Banks, each having regulatory powers. A Federal Reserve Bank is a banker's bank. Local banks borrow so that they may have money to lend their customers. When a Federal Reserve Bank Board raises the interest rate, local banks have to charge more for the money they lend. This restricts what businessmen and others may do, but the power prevents ruinous inflation and overexpansion in the country.

11. Federal Trade Commission - Investigates charges of unfair business practices and issues order to violators to stop. FTC may impose fines up to $5,000.00

12. Food and Drug Administration of the Department of Health, Education, and Welfare - Takes action against those who attempt to sell adulterated food and drug products.

13. National Labor Relations Board - Prevents unfair labor practices by employees and labor organizations, and conducts elections among employees to determine whether or not they want to be represented by a labor organization.

14. Office of Education, Department of Health, Education and Welfare - Gathers information and gives advice to state and local school officials, and is responsible for Federal financial assistance to education. It also regulates matters relative to the execution of the 1954 Sypreme Court decision affecting desegregation of public schools.

15. Securities and Exchange Commission - Seeks to curb unfair practices in the sale of stocks and bonds and supervises the stock exchanges where such securities are sold. The SEC may also order the breakup of large interrelated public-utilities corporations if they work against the public interest.

Notes -- Continued

16. Small Business Administration - Organized to assist and protect small business concerns. It was set up to make loans for new plant construction, conversion to different types of production, and for the purchase of supplies and machinery so small business concerns could become established or expand their operations.

17. Social Security Administration, Department of Health, Education, and Welfare - Regulates the vast Federal retirement, survivors, disability, and health insurance programs; gives financial aid to the states for the needy aged, blind, children without parental support, and others in need of assistance.

STATE GOVERNMENT

Insurance companies are under the jurisdiction of state regulations.

State controls are also exercised over meat inspection, sanitation at retail outlets, dairy inspection, restaurant and hotel inspection, inspection of scales and measurements, etc.

PRIVATE ORGANIZATIONS WHICH REGULATE THEIR AREAS OF INTEREST:

1. American Medical Association

2. U.S. Chamber of Commerce

3. AFL-CIO (labor organization)

4. National Association of Manufacturers

This list of regulator agencies is by no means exhaustive.